

# LARGE - SYSTEM VENDOR COMPETITIVE ANALYSIS

INPUT

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**LARGE-SYSTEM VENDOR  
COMPETITIVE ANALYSIS**

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# LARGE-SYSTEM VENDOR COMPETITIVE ANALYSIS

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## I INTRODUCTION



## I INTRODUCTION

### A. SCOPE

- This report is produced by INPUT as part of the 1984 Customer Service Program for the United States, for clients of that program.
- Customer service organizations are being pressured now more than in any time in their history. Pressure is being exerted by the parent organization, which has just begun to realize the tremendous profit potential that service has to offer. Pressure is also coming from competitive service organizations, including third-party maintenance vendors and other manufacturers that are seeking to expand their service horizons (and revenues). And finally, the service vendor is being pressured by the customer. Users are becoming more price sensitive and are now likely to use a cost-accounting type of analysis to determine the true cost of maintenance on a machine. In addition, users are looking for new types of service and are showing greater interest in becoming involved in the maintenance of their equipment.
- Amid all of these external pressures, field service organizations have had to adapt to a bewildering variety of new technology, including advanced remote diagnostics, dispatching, and systems design.
- It is to their credit that field service organizations have developed as extensively and rapidly as they have. The graduation from cost center to profit

center has been instrumental in unleashing the potential of field service. It is the purpose of this report to analyze the many components of the service organization (such as dispatching, logistics, marketing, etc.) in order to determine successful innovations within the industry. In addition, trends in areas like third-party maintenance and new revenue sources are identified and discussed.

- Finally, there is an overview of the 1983 service activities of seven large-system vendors. This overview concentrates on both successful new service techniques that the industry leaders have employed and the effect these techniques have had on the service industry.

## **B. METHODOLOGY**

- This report is the result of extensive research, data gathering, and on-site interviews. The interviews were conducted in April and May of 1984 at the vendors' field service headquarters. Seven of the top nine large-system service vendors participated. The interviews were based on the questionnaire shown in Appendix A. All vendor responses were statistically analyzed in order to present trends in the industry while assuring that company confidentiality was maintained.
- In addition to the interviews, some of the information presented in this report derived from publicly available information sources, including vendor annual reports, 10-K reports, press releases, and other media information.
- Additional information was derived from ongoing vendor analysis conducted by INPUT in multiclient and custom research.

## II EXECUTIVE SUMMARY





## II EXECUTIVE SUMMARY

- This Executive Summary is designed to help the busy reader quickly review the research findings of this report without having to read each section, while ensuring that the key points are not missed. Each main point is summarized as an exhibit, and an accompanying script is given on the facing page. This facilitates using the Executive Summary as an in-house overhead presentation.
- The most significant development in the large-scale system service market is the drastic and continued improvement in overall systems reliability. If this were to continue (and all signs indicate that it will), then the nature and content of large-system service would change very quickly:
  - From a maintenance/fault-correction service (for which there would be sharply decreased demand) to an integrated support-oriented service.
  - The nature and skill mix of the in-house and in-field service person would be altered considerably, with small numbers of highly specialized technicians complemented by large numbers of low-skilled generalists.
- Each vendor's user base has a different set of user requirements that are heavily influenced by the way in which the vendor portrays itself to the user. It is important that sales promises be based on actual in-field performance (i.e., that sales literature follow performance, not precede it). This is because there are, at last, some excellent results from the field to be highlighted and used in selling the product. Yet not one of the large-system vendors does this (sales literature is produced prior to product launch and remains unchanged throughout the product's sales life).

## A. LARGE-SYSTEM CUSTOMER SERVICE REVENUE GROWTH

- On the average, large-system service revenue represents 20% of total company revenues, and last year grew at an average of 14%. INPUT expects growth to increase to 15% in 1985, primarily influenced by IBM's sharp improvement.
- Growth performances by the large-system service groups are spread over a wide range:
  - In 1983 the growth range was 2%-32%; thanks to Cray Research, the range is expected to broaden to 3%-58% in 1984.
  - Profitability, not yet separately identifiable in vendor results, nevertheless increased in the whole in large-system service groups, owing to lower failure rates, better use of remote support services, and higher per-call rates; but INPUT believes that the spread of large-system service profitability is wide, from a low of 2% to a high of 20%.
- Individual performances that merit attention include:
  - DEC, whose high level of shipments has resumed after the recent pause, and whose total service revenue is soaring.
  - IBM, whose large-system service revenue increase is greatly affected by upgrades to the 308X line (the increase is variously estimated at up to 30% of the total new addition to 308X service revenues).
  - Cray and NAS, which continue to rapidly expand their large-system base and consequent service revenue volume.

# LARGE-SYSTEM CUSTOMER SERVICE REVENUE GROWTH

VENDOR	1983 GROWTH (Percent)	PROJECTED GROWTH FOR 1984 (Percent)
Amdahl	7%	5%
Burroughs	4	3
CDC	6	7
Cray Research	32	58
DEC	29	25
Honeywell	2	5
IBM	16	18
NAS	21	20
Sperry	<u>3</u>	<u>10</u>
Weighted Averages*	14%	15%

\* Weighted by Total Customer Service Revenues

Source: INPUT Estimates, 10Ks, ARs

## B. REMOTE SUPPORT SERVICES (RSS)

- Remote support services (RSS) have yet to reach the level of user penetration that is necessary (less than 40% of large-system users make use of RSS). There is a considerable variation in vendor emphasis on the use of RSS in the U.S., even though most users are beginning to accept its utility. The users' receptivity to RSS increases once users have had direct experience with it. But prior to that, given the generally inadequate vendor promotion of RSS, users did not have a clear perception of the role RSS can play in the kind of support users receive.
- User self-maintenance, a popular notion with vendors and designed by them to reduce their travel labor costs, is not popular with users, and the level of resistance increases in direct proportion to the level of user involvement required by the particular vendor program.
- Two problems remain with RSS. These are:
  - User resistance to the sudden reduction of personal contact that occurs between the user and the vendor when RSS is complemented. This resistance is slowly diminishing, however.
  - User preoccupation with security issues in cases where RSS enables the vendor to have remote access to the user's system. User sensitivity to this issue is still high.
- It is apparent nevertheless that RSS has an essential role to play in service quality (fast response, on-line support) for the user and in containing service costs for the vendors.

## **REMOTE SUPPORT SERVICES (RSS)**

- **Essential for Improving Service Quality and Containing Service Costs.**
- **User Resistance to Reduced Level of In-person Vendor Contact Is Diminishing.**
- **User Resistance to High Levels of Involvement in RSS and User Self-maintenance Is Increasing.**
- **Security Is a Critical Issue Not Adequately Addressed by Vendors.**



### C. SOFTWARE REPAIR TIME—A KEY ISSUE

- Three years ago there was a great deal of pressure on large-system service organizations to improve their response and repair times. By early 1984 much of that pressure had subsided, thanks to improvements in both service hardware response times and (to a far lesser extent) hardware repair times.
- Software response times were simultaneously improving thanks to centralized remote support services, but software repair times were (and still are) another matter. While vendors still measure software repair times in days, users measure them in hours. Very few vendors meet or beat their users' requirements (Amdahl and IBM are the two exceptions).
- The guideline in software repair time (as with hardware repair time) is to be within 10% of the user requirement. Hardware repair time has been improved by modular design and module swapping; software repair is far more complex. Good communications with users can partially offset the negative impact of long software repair times, as can the users' perception that the vendor's hardware and software repair support is coordinated and integrated.
- To achieve this, it is not absolutely necessary that the FE be proficient in both hardware and software (although this is the route that many vendors have taken). Most important is the provision of single-source support to the user (this is, whether the user's call is, in reality, handled by one or two separate organizations).



## **SOFTWARE REPAIR TIME – A KEY ISSUE**

- **With Hardware Response and Repair Times and Software Response Time Close to User Requirements, Spotlight Is on Software Repair Time.**
- **Amdahl and IBM Are the Only Vendors That Meet or Beat User Requirements: Everyone Else Falls Short.**
- **The Key Component of User Satisfaction is Integrated Hardware/Software Staff.**
  - FE Cross-training Is Not Mandatory, But FEs and SW Engineers Must Work Together Effectively.**
  - Users Should Perceive That They Have Single-Source Support.**

#### D. PROACTIVE MARKETING OF CUSTOMER SERVICES

- Proactive marketing, as opposed to reactive marketing, is defined as the aggressive packaging, positioning, and pricing of customer services that the vendor determines will be offered to a major segment of the market. This presupposes, of course, that such segmentation of the market has already been achieved, based on a detailed knowledge of the user base.
- Packaging encompasses the production of descriptive literature, contracts needed to process service business, and description of service options and promotional schemes (both internal and external). Positioning means competitively locating the services offered in the user environment—from the standpoints of service content, coverage, and pricing.
- The current large system is characterized by tougher and tougher user expectations and service competition from third-party maintenance vendors and large-system vendors. (Large-system users are usually well informed about the latest service offerings available from the large-system vendors; even if there is no risk of competitive replacement of installed systems, there can be tremendous pressure brought to bear on the vendor by users that have noticed a new service offering from another vendor.)
- It is essential that customer service organizations view their services as products to be packaged, priced, and marketed just like hardware or software. For the majority of large-system vendors, this requires a new emphasis on customer service marketing. The effort will be amply rewarded by higher revenues and higher customer satisfaction.

## **PROACTIVE MARKETING OF CUSTOMER SERVICES**

- **Detailed Knowledge of User Needs Should Drive User Services. Vendors Should Achieve:**
  - **Market Segmentation**
  - **Packaging of Services**
  - **Positioning of Services in the Environment**
  - **Competitive Pricing.**
- **Growth in Service Options Can Lead to User Confusion: Good Packaging Is Needed.**
- **Increased Large-Systems Service Cooperation and TPM Thrust Require Forceful Marketing of Vendors' Own Service Quality, Options, and Advantages.**



### **III LARGE-SYSTEM VENDOR PROFILES**





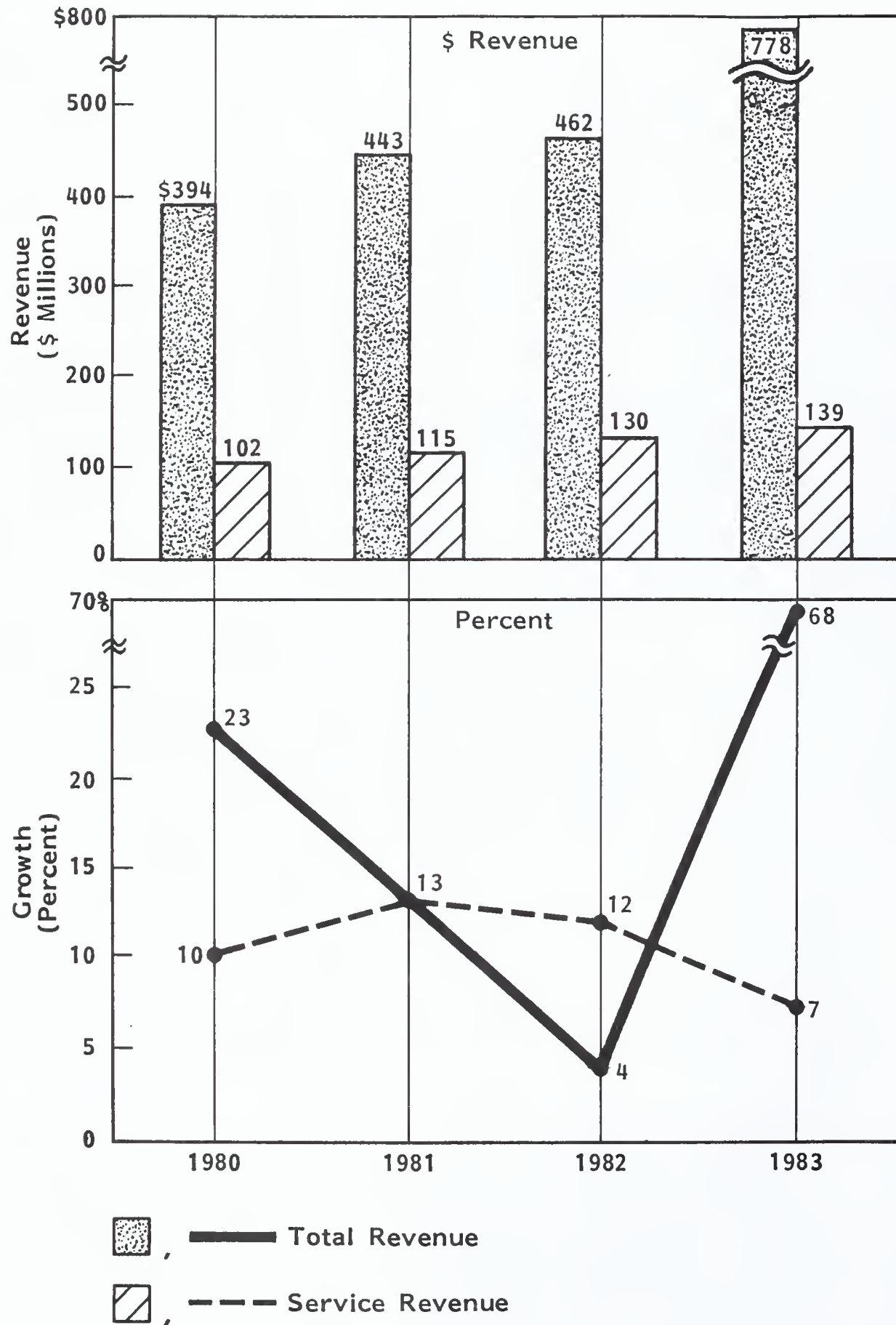
### III LARGE-SYSTEM VENDOR PROFILES

#### A. AMDAHL CORPORATION

- Worldwide revenues at Amdahl increased by 68% in 1983 (from \$462 in 1982 to \$778 million in 1983). Revenue increases resulted from two main factors: an increase in the customer base and the success of new products, including the 580 product line of processors and the 6000-series storage products. Amdahl continues to be considered the largest of the plug-compatible mainframe vendors.
- Amdahl employs over 1,000 people in its Product Support and Services (PS&S) Division, 75% of whom are located in the U.S. Ten percent of the PS&S personnel are located in Canada and 15% in Europe. Estimated worldwide revenues of the PS&S division are \$139 million--approximately 18% of total revenues. INPUT estimates that 60% of service revenue (\$84 million) is derived from U.S. operations.
- Exhibit III-1 demonstrates the growth of Amdahl's total revenue and service revenue from 1980 to 1983.
- The basic ingredient of Amdahl field service is a very high level of customer support. The on-site field engineer is very customer oriented and will perform problem determination on most DP equipment, including non-Amdahl products. Extensive support is provided to the FE by product specialists

# EXHIBIT III-1

## AMDAHL'S REVENUE GROWTH



strategically located at remote sites throughout the United States. The philosophy of "a system problem is an Amdahl problem" has been instrumental in maintaining very high levels of customer satisfaction with Amdahl service.

- One of the key factors in improving service is Amdahl's commitment to remote support. Remote support development was begun in the mid-1970s and is currently available on virtually all Amdahl CPUs. The worldwide remote support network covers hardware and software and is called AMDAC (Amdahl Diagnostic Assistance Console). AMDAC was originally based in Sunnyvale, California, but it is currently being expanded to include regional support centers. Regional centers in Washington, D.C. and Dallas have been opened already.
- AMDAC has been successful because it reduces field service expenses and, at the same time, improves system availability. For example, over 50% of all off-hour calls made to the AMDAC support center in Sunnyvale are solved via remote hookup. Amdahl has indicated that the number of field engineers dispatched has fallen dramatically as a result of remote fixes.
- When engineers are dispatched to a user's site, it is essential that engineers have quick access to spare parts. This logistical problem is particularly important for Amdahl because of the high cost of some of the parts involved. Circuit boards for the 580 series CPU, for example, can cost over \$25,000 each. Amdahl has addressed the problem in the following way:
  - Spare parts management is part of a real-time information network (also including dispatching and diagnostics) that allows Amdahl to dispatch parts in some cases even before the field engineer is dispatched.
  - Amdahl has contracted with Burlington Northern Air Freight to stock expensive low-use parts at 20 airfreight depots throughout the U.S. In addition, the company stocks parts at selected metropolitan locations in the U.S. and Europe.

- If Amdahl cannot guarantee a two-hour turnaround time on parts, it will supply on-site spares to the user.
- A third service-related factor that has improved user satisfaction levels is the extensive software support provided by Amdahl. In a recent survey of large-system service customers, 71% of Amdahl users said they were satisfied with software support--the highest satisfaction rate, by far, of any of the large-system vendors. Amdahl maintains its high level of user satisfaction by offering a variety of support services:
  - Most hardware field engineers have been cross-trained to a limited extent in software support. When engineers are on-site, they are able to diagnose software problems and immediately call for a software specialist when necessary.
  - Field engineers support a no-fault service philosophy and will perform problem determination support on non-Amdahl software.
  - As mentioned above, extensive software service is available from remote support centers. Since problems can be diagnosed and fixes downloaded from remote locations, users appreciate the significant impact remote service can and does have on system availability.
- Amdahl's expanding customer base should have a very positive impact on service in the next three to five years. Rather than overextending its service network, Amdahl will be able to take advantage of economies of scale, particularly with regard to spare parts logistics and remote support. Whereas other companies have begun to offer a "menu" of services, it appears that Amdahl will continue to concentrate on a combination of full on-site/remote support services.

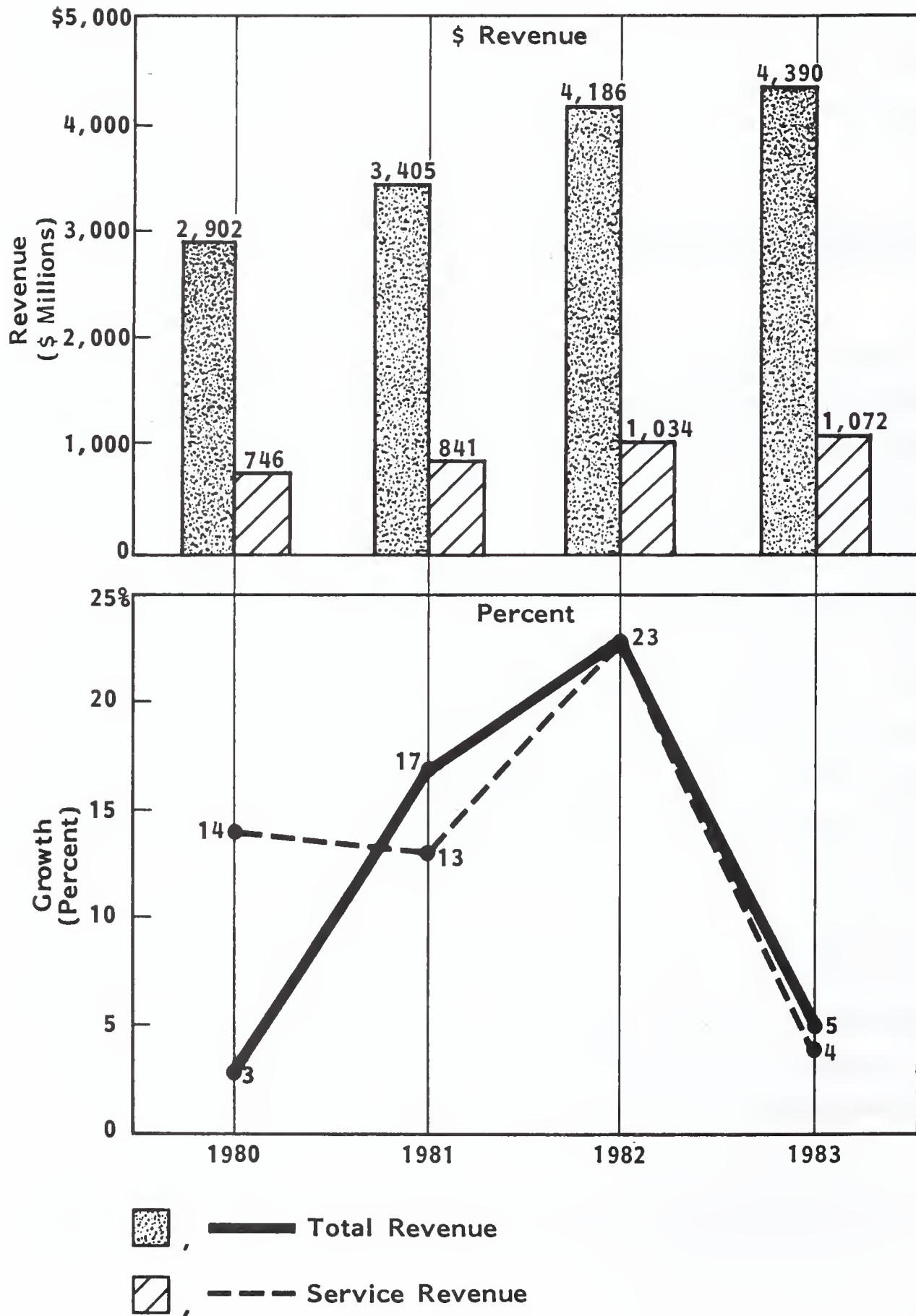


- INPUT does not anticipate any substantial growth in service outside Amdahl's installed base. The company will continue to offer problem determination services on non-Amdahl equipment and software because this service has had such a positive impact on user attitudes. Due to potential problems with parts availability and service training, it is unlikely, however, that Amdahl will enter the third-party maintenance arena.

## **B. BURROUGHS CORPORATION**

- Burroughs Corporation's total revenues increased by 5% in 1983 to \$4.39 billion. Net income grew by 67% (from \$118 million in 1982 to \$197 million in 1983) primarily as a result of managerial cost cutting. Most (86%) of the 5% increase in revenue was from U.S. sources. Overall, however, approximately 41% of total revenues were from non-U.S. sources.
- Exhibit III-2 shows both total revenue growth and equipment service revenue growth since 1980. Service revenue growth generally mirrored total revenue growth. For example, in 1982 the company reported a 23% increase in total revenue, primarily as a result of the December 1981 purchase of Memorex. Service revenues in 1982 also increased 23%. In 1983 total revenue growth was 5%; service revenue growth was 4%. Exhibit III-2 lists the percentage growth rates for total revenue and equipment service revenue.
- It is interesting to note that even though equipment service revenues are at an all-time high, their percentage of total revenue has been falling. From 1976 to 1980, service revenues increased from 21.6% of total revenue to 26% of total revenue. Since 1981, however, service revenues have been steadily falling and are now (end of fiscal 1983) at 24.% of total revenues.
- Field service at Burroughs has benefited from several factors in 1983. First, the company introduced a wide variety of new products, ranging from the B95

BURROUGHS' REVENUE GROWTH





small business computer up to the new A-9 mainframe. These new systems contain the latest developments in field service technology. The A-9, for example, has intensive remote support capabilities that can be accessed at the user's site as well as from Burroughs' Customer Support Centers. The company maintains eight support centers for all products, in addition to four support centers for specific product lines.

- A second factor that has helped field service at Burroughs is the increasing management emphasis on service and customer support. Burroughs' CEO, Michael Blumenthal, has been particularly active in improving the company's image in the area of field service. This new emphasis on service has not been lost on the company's users. In a recent survey, user ratings for vendor responsiveness showed that, of the top ten large-system service vendors, Burroughs had the greatest increase in ratings. In addition, user ratings of Burroughs' service image increased from 6.75 (on a scale of 1=low, 10=high) in 1982 to 7.32 in 1983.
- Another major development at Burroughs in 1983 was the creation of the Software Products and Services division in January. The division has over 2,000 employees to support both application and system software. In addition, this division offers after-sales support services such as consulting and training. Burroughs reported a 50% increase in customer use of software services between January and June of 1983. Software response time, which had been a problem, was improved by more than 30% in 1983.
- Like other large-system service vendors, Burroughs has been trying to improve the efficiency of its field service operation. A centralized parts inventory data base was established in 1983 to reduce duplicate inventory and increase parts availability. In the survey mentioned above, almost 15% of users said that parts availability was the single most important area in which Burroughs could improve service.

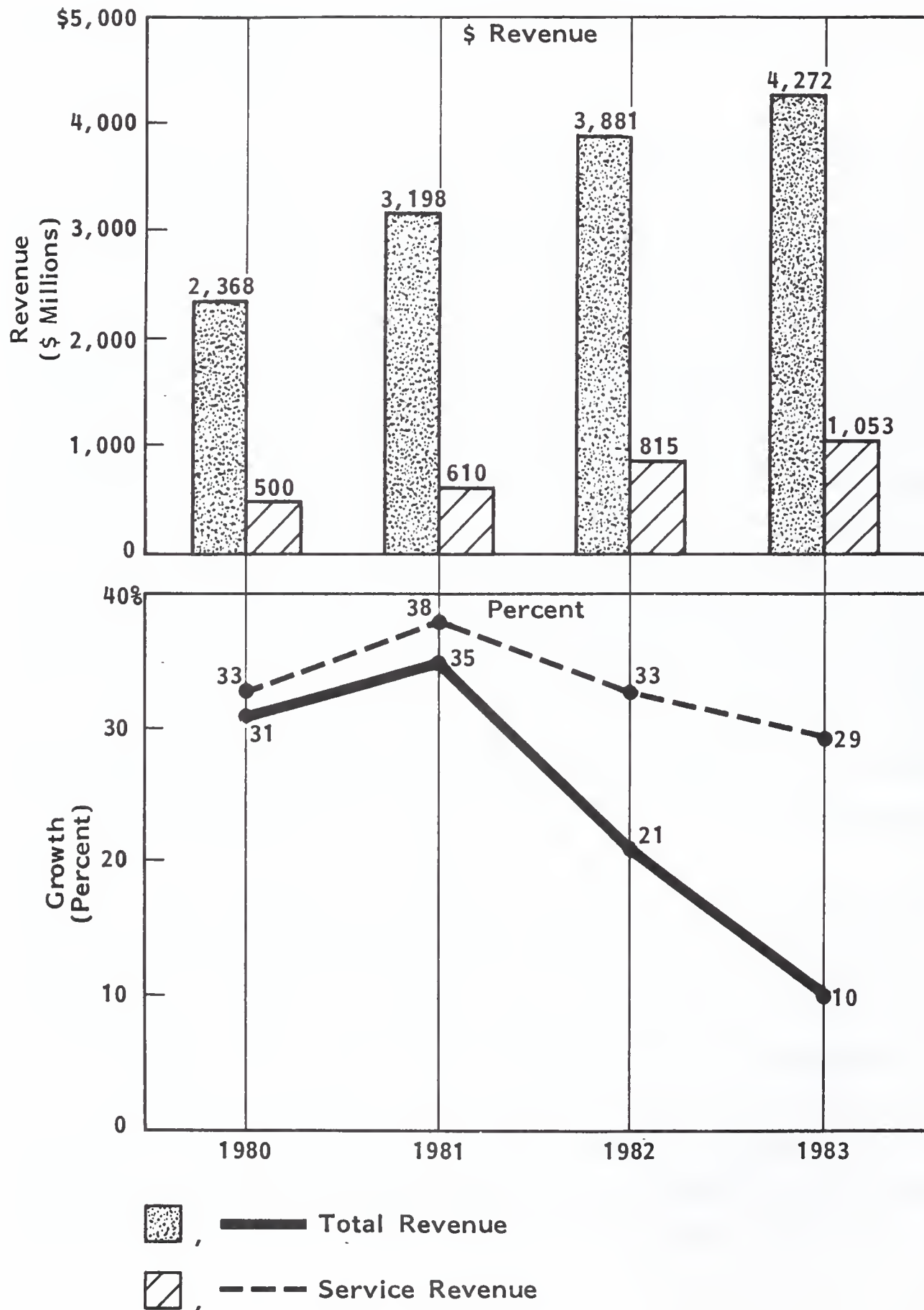
- Improving internal education and training is a second method of improving field service staff efficiency, according to Burroughs officials. To that end, the company has recently completed a \$23 million facility in Lisle, Illinois to train field engineering and support service staff. The facility has a capacity of 450 students.
- Burroughs' service had slipped significantly in the early 1980s; however, the company has made impressive gains in the last year. Improving software support is clearly a major goal, particularly as Burroughs moves away from direct competition with IBM and into a customer-oriented, integrated-system environment. Paul Stern, Burroughs President and Chief Operating Officer, has indicated that this trend toward improving software and support will continue, fueled primarily by an increase in R&D monies. While the company has committed itself to software support, it has not neglected other service areas. Training and development of staff, remote diagnostics, and spare parts control have all been improved.
- It appears that 1983 was a year of consolidation in Burroughs service. As the company begins to meet and then exceed user expectations in service, there is every reason to believe that Burroughs will become more aggressive in marketing its services. The Burroughs On-line Supplies Service, opened in late 1983, is an example of the type of service the company will offer as it attempts to expand its share of the service market.

### **C. DIGITAL EQUIPMENT CORPORATION**

- DEC reported total revenues in fiscal 1983 of \$4.272 billion, making it the second largest computer vendor. Total revenue rose by 10% over 1982—a rise considerably lower than the 21% growth rate the company experienced from 1981 to 1982, or the 35% growth rate from 1980 to 1981. The company experienced four basic problems in fiscal 1983:

- The recession hurt new orders for mainframes and minicomputers.
  - New product development, such as for the Venus mainframe, fell behind.
  - Microcomputer sales were poor.
  - An extensive administrative upheaval resulted in the resignation of nine vice-presidents.
- Revenue figures from the second and third quarters of fiscal 1983 indicate that DEC is improving its revenue position: revenues for the second quarter of 1984 (ending December 1983) were up 40% over the same period in fiscal 1983, and third-quarter revenues were up 31%. Revenues derived from field service were instrumental in improving bottom-line growth. INPUT estimates that field service revenue grew by 29% in 1983 (to \$1,053 million) and represented a full one-quarter of the company's total revenue. Approximately 61% of DEC's field service revenue was derived from U.S. sources and 39% from foreign sources.
  - Exhibit III-3 shows total and field service revenues at DEC, as well as their percentage growth.
  - One of the reasons DEC field service has grown so rapidly despite sluggish new system sales is DEC's aggressive marketing of new services—not only to current customers but to new markets as well. Of course, by controlling almost 30% of the installed minicomputers, DEC has a huge potential market in which to sell its new service products.
  - DEC's entry into the third-party maintenance market has been one of the best received new services. Late in 1983 DEC announced its intention to service selected non-DEC products that were attached to DEC equipment. Initially

DEC'S REVENUE GROWTH





the company limited the non-DEC products to those of a few manufacturers of printers, disk drives, and tape drives with which DEC already had service experience. However, there is little doubt that DEC will expand the list of products served, as demand for the service grows. (DEC already announced it would not service products that were competitive with DEC equipment.)

- DEC's TPM program is currently divided into two sections: 1) an OEM service agreement, under which DEC provides service to an OEM that may purchase hardware from another vendor, and 2) a vendor service agreement under which DEC is promoted by peripheral vendors as the source of service.
- Nearly 100 products are serviced under the pilot program, which began in the fall of 1983 and will finish this summer.
- INPUT interviewed numerous DEC users in 1983 and found that almost 100% were currently using or considering using third-party maintenance at their site. Many of these users had no option but to use TPM since the original manufacturer did not offer the level of service required by the user. DEC recognized that by offering TPM, it could: 1) increase user satisfaction by offering a new high-demand service, 2) protect its installed base against encroachments by other TPM vendors, and 3) realize potentially huge service revenues.
- In addition to third-party maintenance, DEC field service has been active in offering a variety of other new services to its users. In 1984 the company introduced "DECmailer," a mail-in parts service for users who do their own maintenance. According to DEC, it has in stock over 1,100 major subassemblies, which are shipped out to the user within five days of the request. A 24-hour emergency service is also available.
- Another new service offered by the field service organization is a storage and maintenance service for media products. The Records Management Service was an outgrowth of DEC's own in-house media storage operation and has been

set up initially in Boston, Los Angeles, and Chicago. These pilot centers provide off-site storage of magnetic tape, disk, microfiche, and/or paper. In addition to these services, the company is considering a computer disaster backup service.

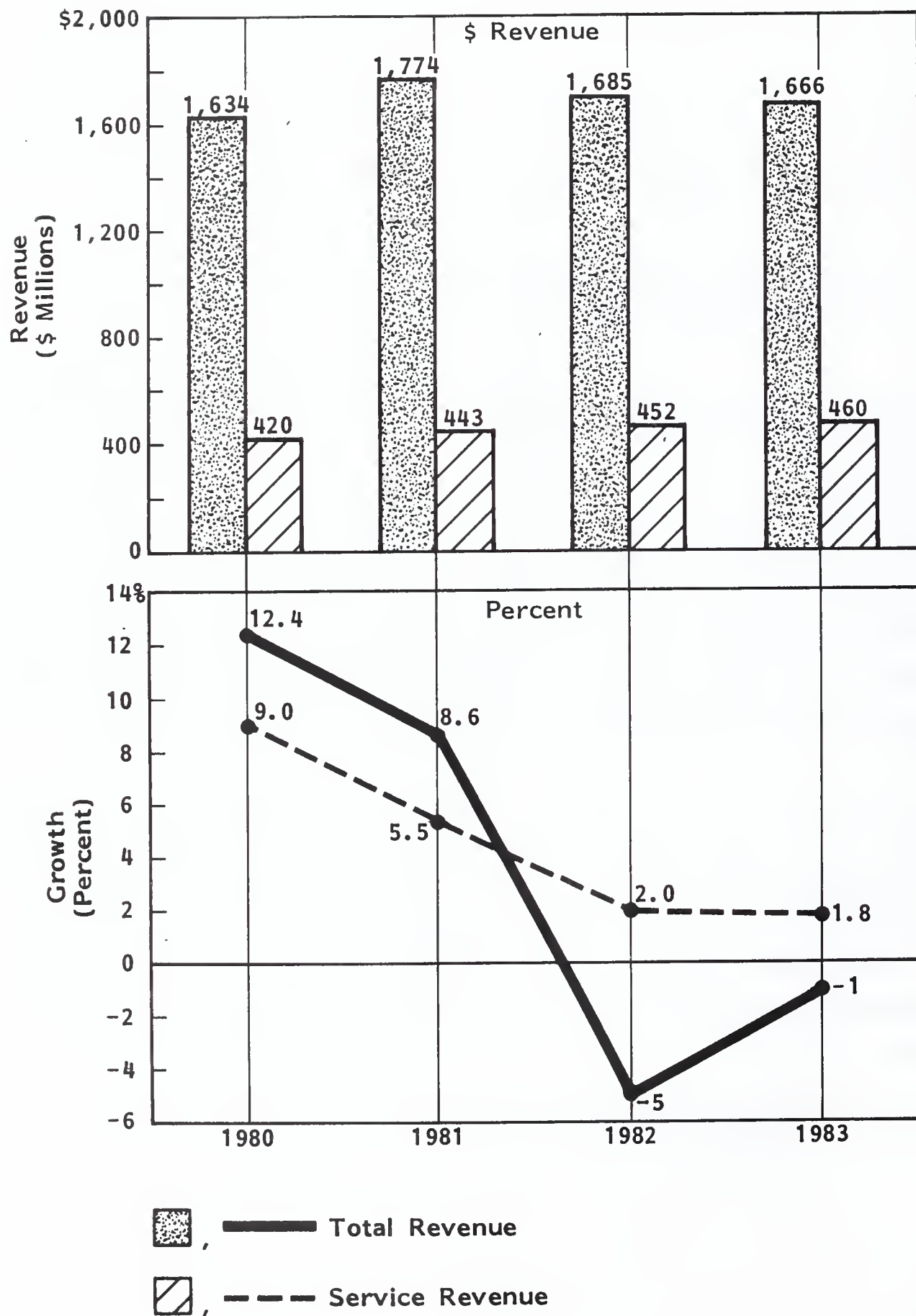
- Another innovative approach to maintenance was the "DECdirect" service begun in late 1983. DECdirect is basically a computer supplies house that stocks everything from diskettes to computer tables. The company mails an attractive catalog to users, who are encouraged to establish a "Digital Account" in order to facilitate order shipment. Overall, users have responded well to this type of marketing, which has led to several other companies establishing "direct" supplies-ordering services.
- While DEC has been very active in offering new services to its users, it has also been successful in tailoring its service menu to meet users' needs. DEC has one of the most advanced user self-maintenance programs in the industry. As noted above, users can purchase extensive spare parts kits. In addition, DEC will provide its self-maintenance users with extensive support, including documentation, maintenance aids, training, and per-call backup support. Of course, full service is always available to DEC users, but the company has correctly identified a large segment of the user population that desires the financial benefits that user self-maintenance can provide.
- Overall, DEC's problems in 1983 may have been a blessing in disguise for the company's field service operations, because they emphasized the ongoing value of service, even during recessionary and transitional periods. It is clear that, once given the opportunity, field service operations are able to capitalize on an aggressive marketing of maintenance and sales support services. INPUT expects DEC to become a major force in the TPM market and to continue to expand support services in the areas of user self-maintenance, direct sales of supplies, and noncapital goods purchases.



#### D. HONEYWELL INFORMATION SYSTEMS

- Total worldwide revenue for Honeywell's Information Systems (HIS) Division in 1983 was \$1.666 billion, with a profit margin of 7.9% or \$131 million. Customer Service contributed approximately \$460 million, or 28% of the Information System Division's total revenue. INPUT estimates that the customer service growth rate was 2% between 1982 and 1983.
- Exhibit III-4 shows total revenue growth and service revenue growth at Honeywell from 1980 to 1983.
- Honeywell's Customer Service Division has over 4000 employees (including over 2000 field engineers) located in 250 offices throughout the world.
- The Customer Services Division at Honeywell has been very active during 1983 in exploring new revenue sources. One of the most important new announcements was the company's third-party service, "Total Care." In addition to Total Care, Honeywell continues to expand its Customer-Assisted Maintenance Program (CAMP), and has increased the number of training and education services offered to customers.
- The development of the Total Care program at Honeywell signaled more than just a new service—it indicated that Honeywell has committed itself to reemphasizing service as a business. The company's effort was begun in November 1983, when it announced contracts to service selected non-Honeywell peripherals. Honeywell is actively seeking out its market and has announced third-party maintenance agreements with six companies as of April 1984.
- Honeywell entered the third-party market for several reasons.

HONEYWELL'S REVENUE GROWTH



- It expects to utilize its current field engineering staff more efficiently. HIS officials indicated that as machines have become more reliable, the requirement for field service staff has been reduced. Third-party maintenance helps to increase the shrinking work load.
  - There is a requirement in the market for this type of service. Many microcomputer, terminal, and telecommunication vendors are too small to maintain a national service network. Honeywell fills this service need.
  - Honeywell has a strong background in providing informal third-party maintenance, particularly to national accounts. This background is useful not only in providing service-related experience, but also in evaluating new service options.
- Like most of the vendors currently offering or considering offering third-party maintenance, Honeywell is concentrating primarily on "complementary" products (i.e., not directly competitive with Honeywell products). In this way the company hopes to avoid problems with spare parts and training—problems that have beset other TPM vendors.
  - Increasing the "menu" of service options is a second goal at Honeywell. The company is among the leaders in encouraging user involvement in maintenance. The Customer-Assisted Maintenance Program is designed primarily to reduce service costs by having the user participate in service. Thirty-five walk-in service centers are planned. These centers will offer users the option of returning components (such as keyboards) for exchange or repair.
  - Honeywell has recognized that remote support is and will continue to be an integral component of maintenance. Users typically initiate the remote support process by calling one of the three Technical Assistance Centers (TACs), which are located in Newton (MA), Phoenix (AZ), and Atlanta. The Remote Support Facility (RSF) is an internal component in the system that

allows the TAC centers to diagnose and download solutions to system problems. While the technical aspect of Honeywell's RSF may not be unique, the extent to which the company has involved the users, in both initiation and ongoing use of remote support, is unique.

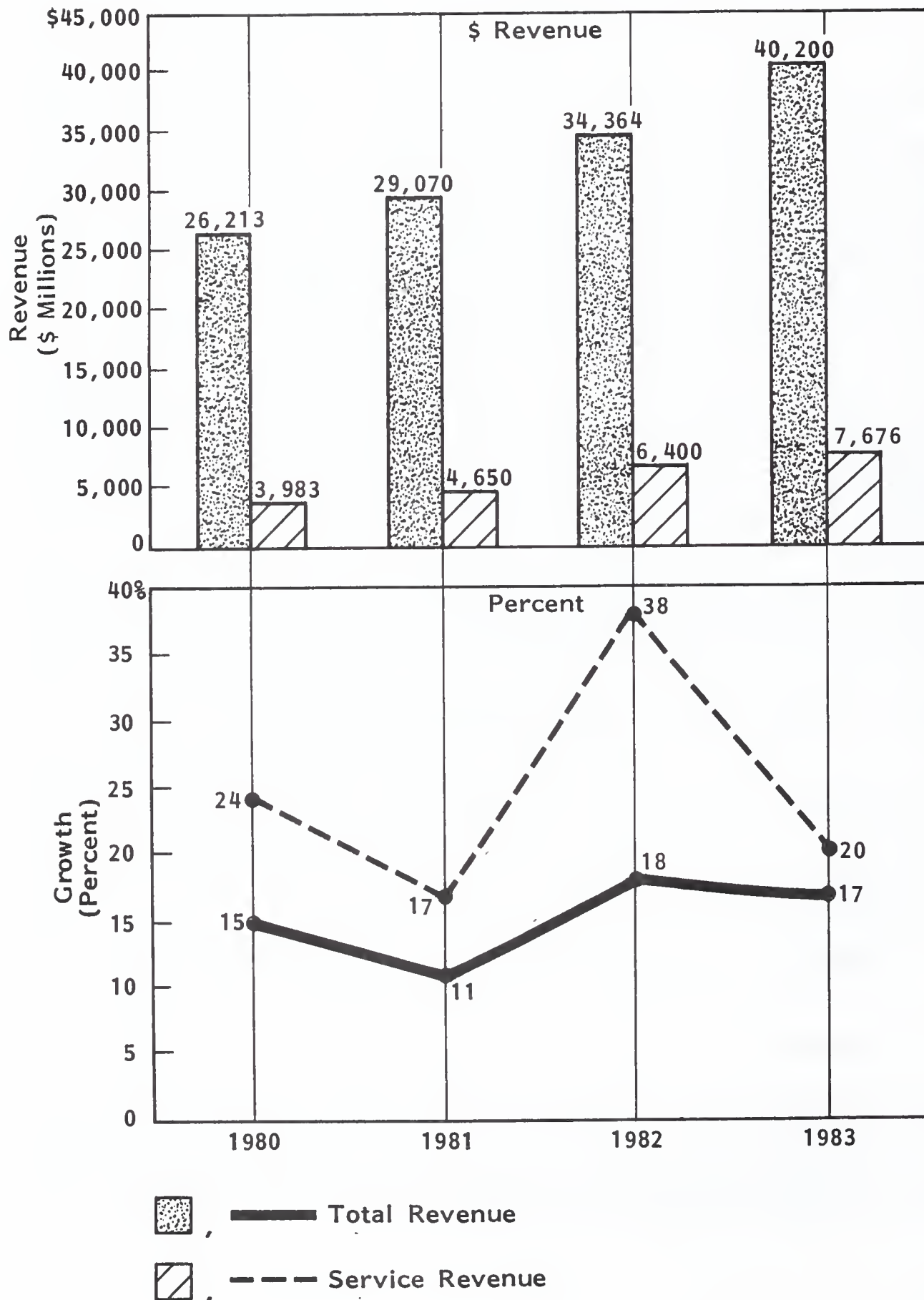
- Spare parts control and distribution is another area that has received extensive development efforts. Honeywell announced the "Logistics Inventory Data System" (LIDS)--an inventory tracking system covering the company's hundreds of points of supply nationwide. Honeywell is trying to maintain the efficiency of a centralized parts network, while at the same time maintaining a high level of user satisfaction due to rapid parts availability. The company's goal is to deliver spare parts within four hours if the user is less than 50 miles from the point of distribution.
- Another customer-oriented approach to spare parts distribution is the Customer Service Vehicle Program initiated by Honeywell in 1982. The vehicles are located in metropolitan areas throughout the United States and carry an extensive stock of frequent-failure spare parts. Company officials have indicated that they regard on-site delivery/exchange of spares as an essential component of the Customer-Assisted Maintenance Program.
- In many ways, Honeywell has been the most dynamic of the large-system service companies in the past year. Its aggressive entrance into the third-party maintenance market has indicated a willingness on the part of the company to seek out new revenue sources. At the same time, however, the company has listened to its current customers, expanded service options, and displayed a substantial commitment to user self-maintenance.

## E. INTERNATIONAL BUSINESS MACHINES

- It is no surprise that IBM continues to be by far the largest vendor of computer equipment, with total worldwide revenues of over \$40 billion. What is surprising is that it can maintain an overall growth rate of almost 20%. Revenues increased from \$34,364 million in 1982 to \$40,200 million in 1983. U.S. gross income alone increased by 21.5% in 1983. Overall net earnings in 1983 were \$5.5 million, an increase of 24% over 1982's earnings. Revenue for the first six months of fiscal 1984 was \$2.83 billion, 22% higher than the same period last year. Net earnings were 20% higher than in 1983.
- Service revenue, including program products and maintenance, increased by 19.9% to \$7,676 million in 1983. Worldwide maintenance revenue alone rose to \$4,577, up 16.2% from 1982. U.S. service revenue was \$4,200 million in 1983, an increase of over 11% from 1982.
- Exhibit III-5 shows that IBM has the highest and most consistent revenue growth of all the large-system vendors.
- IBM has stated that they have four strategic business goals:
  - Growth.
  - Product leadership.
  - Efficiency.
  - Profitability.
- Each one of these goals is applicable to the company's two service divisions (Field Engineering and Customer Service). It is in product leadership and efficiency, however, that IBM has influenced the service industry most.



## IBM'S REVENUE GROWTH





- One example of more efficient field service operations is the digital communications system developed by IBM and Motorola. The system ties together large-scale computers with hand-held terminals and helps the field engineer to reduce paperwork and cut communication interaction time from over four minutes to twenty seconds. The new communication system saves IBM money and improves user satisfaction by allowing the FE to be more responsive.
- A second example of increased efficiency resulting in improved service is IBM's elaborate spare parts logistics operation. The company has centralized its parts storage in Mechanicsburg (PA) and has 21 regional distribution centers. The central parts storage center is fully automated and, because of efficient planning, has provided better access to parts and reduced the spares inventory. Almost three million spare parts per year are processed at the Mechanicsburg facility. Despite this overwhelming work load, not one of the 54 IBM users interviewed recently by INPUT complained about spare parts availability.
- Industry observers have pointed out that IBM benefits from a huge installed base and very efficient economies of scale when it comes to providing service. Although this is certainly true, it tends to downplay the innovation and service leadership the company has shown. In the early 1970s, for example, IBM began planning for the expected massive increase in the cost of on-site service. Many of the remote support facilities such as the Large Systems Support Center, located in Poughkeepsie, New York, are the direct result of such innovative field service planning.
- Software support is another service area that IBM has dominated. Large-system software services are the responsibility of the field engineering division, which handles both system and application (IBM) software as well as hardware. A hotline for remote support of software is available, and IBM has indicated that almost 90% of calls for software assistance in the United States are resolved over the telephone.

- IBM explains that the success of its software support effort depends on three key factors. First, the company expects user involvement in software diagnosis and repair. Most of the IBM users interviewed by INPUT had in-house software technicians, and almost two-thirds of these users were satisfied with this type of interactive software support. The second factor leading to the success of IBM's software services is the high quality of software engineers that IBM can attract. The third factor is the extensive network of remote software support available to the user. Although software engineers will still perform on-site service, IBM has made this option financially unattractive to most users. Instead, the company has "sold" users on the efficiency and effectiveness of remote support. As the above-mentioned 90% success rate shows, selling remote support now is not too difficult.
- More than 35,000 people worldwide are employed in the two IBM field service divisions, and keeping this work force up to date on the latest service techniques is a problem. IBM has developed the Field Instruction System (FIS) to solve this problem. FIS is a central host system based in New York but extending into every branch office via computer terminals. Seminars, training sessions, etc. are transmitted over this network. In addition, the company has made extensive use of self-paced instructional materials such as videodisks, filmstrips, etc. Finally, IBM has education centers located in New York, Chicago, and Washington, D.C.
- IBM has a definite advantage in large-system service and maintenance because of its dominance in the large-computer marketplace. However, dominance of a market is not the goal of IBM field service, as it is for other divisions. IBM's field service and customer service divisions must operate within the fair strategic business goals mentioned earlier. To maintain profitability, the company will continue to expand remote services as a way of reducing the high costs associated with on-site service. There will be continued movement toward some user self-maintenance, particularly for software. In addition, IBM will be searching for new revenue-generating after-

sales support services to compensate for lower revenues from hardware service.

#### F. NATIONAL ADVANCED SYSTEMS

- National Advanced Systems (NAS) revenues for fiscal 1983 are estimated to be \$335 million. NAS is a subsidiary of National Semiconductor Corporation (NSC) and organizationally has been placed in NSC's Digital Systems Division. Overall NAS service revenues are estimated at \$78 million--23% of total NAS revenue. The company was reported to have recently turned profitable on a quarterly basis. Company officials predict 10% profitability by 1985.
- Since the late 1970s NAS (at that time, the Computer Equipment Operation division of INTEL Corporation) has been moving away from the actual manufacture of computers and toward the service/marketing of large-scale systems. Today, the company's primary business is to market and service IBM-plug-compatible mainframes manufactured by Hitachi Ltd. of Tokyo. NAS has shipped over 900 mainframes as well as peripherals to over 2,000 customers in 27 countries. NAS currently has approximately 600 field service staff in 100 U.S. cities, "plus a large contingent outside the United States."
- In a recent survey conducted by INPUT, NAS users gave the company one of the highest overall service ratings of all large-system vendors. Satisfaction was derived in part from the high quality of Hitachi-made equipment and in part by the quality and depth of service offered by NAS.
- NAS was particularly successful in providing selected after-sales support services, according to its users. Planning and consulting services, for example, averaged a 90% satisfaction rate. Training, with 83% of users satisfied, was far ahead of that from other plug-compatible mainframe (PCM)

service vendors. Success in providing after-sales support, coupled with an excellent record of hardware support, is the basis of the "Total Support Package" (TSP) announced by NAS in December 1983.

- TSP is a group of support services offered on IBM and plug-compatible mainframes and peripherals. The support package will include hardware and systems software maintenance in addition to other services such as consulting, training, and networking. NAS is clearly attempting to build on the success it has had servicing NAS computers by offering an equally high level of service for the equipment of other manufacturers.
- One of the most obvious problems NAS will confront as it enters the third-party and/or single-source maintenance markets will be the requirement for spare parts. The first agreement under the NAS TSP program was to service IBM-compatible Magnuson mainframes. Parts availability has been assured in this case by contractual access to parts and logistics support from Phoenix Leasing, Inc. In the future, NAS has indicated that it will require contractual access to spare parts or the user will take responsibility for parts accessibility.
- Although parts availability for non-NAS products is currently under consideration, NAS has already instituted an elaborate logistical support system to assure NAS users of a two hour parts availability within most metropolitan areas. The logistics organization is centered in Sunnyvale (CA) and includes six regional parts centers as well as extensive spares located in branch offices.
- NAS operates at a competitive disadvantage in parts logistics for two reasons. First, the installed base is comparatively small and geographically dispersed. In some cases, NAS must supply on-site parts "kits" to remote locations that cannot efficiently be serviced by branch or regional parts centers. Second, since NAS must order replacement parts and repairs from Japan, the turnaround time is substantially greater than for U.S.-based



companies. It is certainly a measure of the success of the logistics organization at NAS that only 6% of its users even mention parts availability as an area needing improvement.

- In June 1984, NAS announced that a 95,000-square-foot building in San Jose (CA) had been leased in order to support parts distribution and repair operation.
- Despite the disadvantages, NAS has developed one of the most successful large-system service organizations. By coordinating the high-profit-margin aspect of service (i.e., software support, consulting, etc.) with site management/control techniques, NAS hopes to expand its influence in the service market. Clearly, users are interested in this increased level of support for the high end of the mainframe market. It remains to be seen, however, if users will be satisfied with the high level of support offered by NAS or whether they will then require additional support services in applications software, communications, etc.

#### G. SPERRY CORPORATION

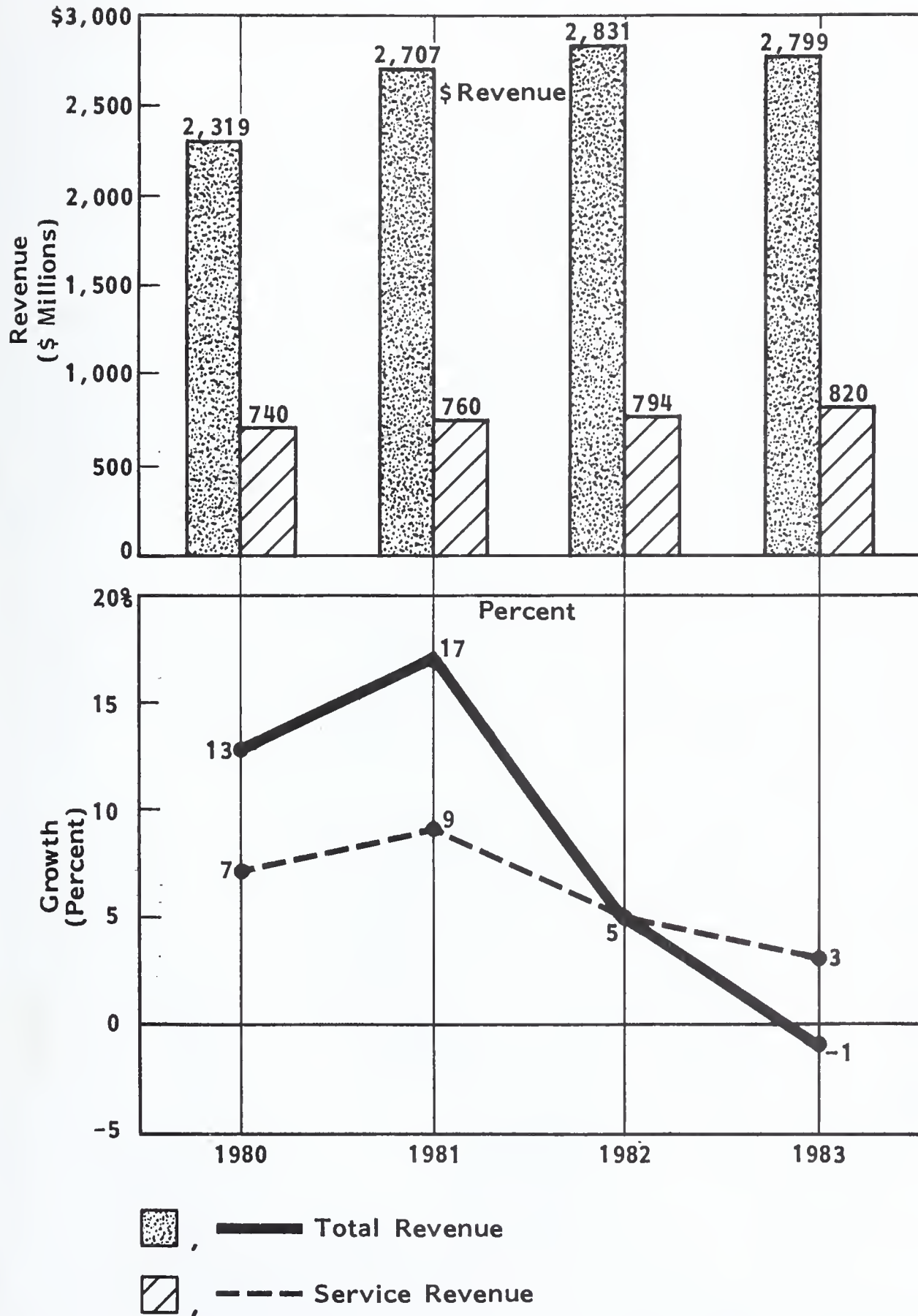
- Sperry Corporation's Computer System and Equipment Division has experienced little or no revenue growth since 1981 and, because of rising costs, net income has been falling steadily. For example, in fiscal year 1983 (ending March 1983) revenues for the Computer System Division were \$2.799 billion, down 1% from 1982. Net income for 1983 was \$110 million, down 28% from 1982.
- Because revenue growth was not meeting expectations, Sperry instituted extensive cost-cutting measures in 1983. Over 11,000 employees were laid off companywide, and executive salaries were reduced by 17.5%. In addition, Sperry halted subsidized financing for computers. These cost-cutting measures

have been successful: net income for the first nine months of fiscal 1984 was up almost 100% over the same period in 1983 (\$129.4 million versus \$65.2 million). Overall, the company now expects computer systems revenue to double over the next five years, with an annual profit growth of 30% or more.

- INPUT estimates that Sperry field service revenues were \$820 million in 1983 and represented 29% of the company's total information systems revenue. Field service revenues grew at approximately 3% in 1983.
- Exhibit III-6 demonstrates total revenue and service growth from 1980 to 1983.
- Sperry has been very active in introducing new products and/or services in order to bolster its sagging revenues. Over 30 new hardware and software products were introduced in 1983, and the Computer System Division's R&D budget was increased to 11% of revenue (\$320 million). In addition, the company was successful in landing a series of U.S. and Canadian government contracts that total more than \$1.5 billion and should have a very positive impact on the field service group. Approximately 26% of the Computer System Divisions revenue came from U.S. government sources in 1983.
- "Sperrylink," an integrated office system introduced by the company in 1982, is an example of a new product that has not been as successful as anticipated. Although company officials projected sales in the billions by the late 1980s, the system had reportedly been installed in only 60 sites by the end of 1983. One of the major initial problems with the system was its dependence on the Sperry 1100-series mainframe. Not only does this dependence exclude popular personal computers from the office network, but it also restricts sales to Sperry accounts.
- Another new product that has received lukewarm reviews is the personal computer from Sperry. Introduced in December of 1983, Sperry's PC is seen as too little too late. Although it is likely to hold the interest of current



SPERRY'S REVENUE GROWTH



Sperry mainframe users, even company officials are planning for somewhat less than 4% of the microcomputer market as their goal. Sperry has decided to market the PCs through a network of 43 "Productivity Centers." These centers will be located in Sperry sales offices and will not even have the benefit of their own retail sales front.

- The field service group at Sperry has been oriented in the past primarily to the 15,000 mainframe customers the company has worldwide. In many cases, Sperry service has been far above average, but the company has been reluctant to publicize the services it offers. For example, the company initiated remote hardware maintenance in 1972, and in 1980 pilot-tested a remote support center. Today, the 1100-series mainframes are covered by extensive remote hardware and software support. Extensive experience such as this would have been exploited by some other companies, but INPUT found in a recent survey of UNIVAC customers that some users were unfamiliar with Sperry's remote service.
- Like most large-system vendors, Sperry has unbundled software support and charges an extra 20% to users requiring on-site software support (called Extended Support Services). Unbundling began originally in the late 1970s with the 1100/60-series mainframe, along with the introduction of remote support centers.
- Sperry is acknowledged as one of the major field service vendors in the industry; but it seems reluctant to advertise its own strengths in this area. Although the company has been rated by its users as far above average in numerous after-sales support areas such as planning, consulting, and sale of supplies, there appears to be little or no interest in expanding field service beyond the traditional boundaries of hardware and (now) software maintenance.

**IV LARGE-SYSTEM CUSTOMER SERVICES  
OPERATIONS ANALYSIS**



## IV LARGE-SYSTEM CUSTOMER SERVICES OPERATIONS ANALYSIS

### A. DISPATCHING

- Dispatching is an important element of service to both users and vendors:
  - Users see dispatching as an essential component of response time: if the dispatch message is transmitted incorrectly, then response is delayed and system availability reduced.
  - Dispatching is important to the vendor because it is a central component of the efficient allocation of human and capital resources.
- Because of the importance of dispatching, most of the large-scale vendors interviewed by INPUT have designed and implemented sophisticated dispatching networks. Dispatching has been automated and centralized at almost 90% of the large-system service vendors interviewed by INPUT. Vendors report that progress in dispatching is one way they can accommodate the conflicting demands on them resulting from a growing user base and the need to lower (control) service costs.
- It is surprising to note that while dispatching has become more efficient, user ratings of dispatching decreased between 1983 and 1984. Exhibit IV-1 shows that user ratings of dispatching declined for six of the top nine large-system service vendors in 1984. This decline is not related to actual performance.

# EXHIBIT IV-1

## USER RATINGS OF HOW WELL VENDORS HANDLE DISPATCHING

VENDOR	1984 MEAN (1-10)	1983 MEAN (1-10)	1983-1984 PERCENT INCREASE (Decrease)
Amdahl	8.4	8.4	-
Burroughs	7.5	7.6	(1.3)
CDC	7.6	7.5	1.3
Data General	7.4	7.7	(3.9)
DEC	7.9	7.8	1.3
Honeywell	7.0	7.5	(6.7)
IBM	7.8	8.2	(4.9)
NAS	8.3	8.6	(3.5)
Sperry	7.3	7.9	(7.6)



Users acknowledge that dispatching is more efficient and, particularly in software, response time has improved. Users are downgrading vendor performance dispatching, primarily because they feel they are losing control--they no longer have access to "their" FE through the local dispatch center.

- Exhibit IV-2 is a comparison of the various advantages and disadvantages of centralized dispatching, as opposed to local control of dispatching. Despite its recognized efficiency, the centralized system receives consistently poor ratings with regard to its overall ability to satisfy customers.
- Service vendors, as noted above, feel that centralizing and automating the dispatch function is the only profitable alternative available. One vendor projected that ratings of centralized dispatching will rise as customers come to appreciate the efficiency of their approach. INPUT believes that vendors must take a more active approach in demonstrating the efficiency of centralized dispatching before users will fully appreciate the value of this service. If vendors do not promote the benefits of centralized dispatching, customer dissatisfaction will continue to increase and an erosion of the customer base is likely to occur.
- As vendors begin to make substantial changes in dispatching (and other services as well), they must be prepared to demonstrate why their new service is in the clients' best interests. Invariably, vendors that were active in promoting the benefits of centralized dispatching reported an easier conversion than vendors that did no advertising.
- Exhibit IV-3 lists the various dispatching methods used by major large-system service vendors. Almost all the vendors (NAS being the only exception) have implemented a national or regional centralized dispatch network. In addition, some vendors have continued local dispatching as a convenience to their users.
- Amdahl offers its users three dispatching methods--centralized dispatching, local dispatching, and calls directly to the FE. It is not surprising considering

EXHIBIT IV-2  
LARGE-SCALE SYSTEM  
COMPARISON OF DISPATCH METHODS

OPERATIONAL CRITERIA	DISPATCH ALTERNATIVES		
	BRANCH	DISTRICT	CENTRAL
Field Management Control of FE	High	Moderate	Low
HQ Management Control of Daily Operations	Little	Moderate	Considerable
Call Escalation (Alert) Procedures	System alerts in sequence: Area/branch office, district office, regional office, headquarters	System alerts dispatcher who contacts area/branch office and subsequently district manager; regional office and headquarters are alerted by FEs	System only alerts dispatcher; dispatcher alerts in sequence area/branch office, district office, regional office, headquarters
Ability of District Management to Affect Customer Satisfaction	Good	Very Good	Poor
Ability to Calm Irrate Customer	Very Good	Good	Poor
Awareness of Local Conditions Affecting FE Dispatching	Good	Fair	Poor
Knowledge of Customer	Good	Good to Fair	Fair to Poor
Response of Dispatcher to FE Question	Fast: Branch Phones are Continuously Staffed	Fast: District Phones are Adequately Staffed	Fast: Large Number of Dispatchers
Hardware & Communications Cost	High	Low to Moderate	Low
Off-hour Dispatch	Poor	Poor to Good	Same as Regular Shift
Protection from Loss of Dispatch Center	Adjacent Area Assumes Lost Center's Activity	Redundant Hardware	Redundant Hardware
Manual Backup	Easy	Moderate	Very Difficult

# EXHIBIT IV-3

## LARGE-SCALE SYSTEM DISPATCHING METHOD - BY VENDOR

VENDOR	CENTRALIZED DISPATCHING (Y/N)	REGIONAL DISPATCHING (Y/N)	LOCAL DISPATCHING (Y/N)	USER RATINGS (1-10) *
Amdahl	Y	Y	Y	8.4
Burroughs	Y	N	N	7.5
CDC	Y	N	N	7.6
Data General	N	Y	N	7.4
DEC	N	Y	N	7.9
Honeywell	Y	N	N	7.0
IBM	Y	N	Y	7.8
NAS	N	N	Y	8.3
Sperry	N	Y	Y	7.3

\* 1 = Low, 10 = High

this variety of dispatching alternatives that Amdahl has received the highest user ratings in dispatching. It should be noted that Amdahl users have opted overwhelmingly to call centralized dispatch centers rather than the other two alternatives. The users have chosen centralized dispatch over the other alternatives primarily because of the efficiency of remote support, which is available only through the centralized dispatch center.

- IBM and NAS also encourage users to call local dispatching centers. IBM has, of course, a centralized dispatch center and a sophisticated radio communications system, but it still caters to the customers' need for personalized treatment. On the other hand, NAS is just now instituting a centralized dispatch system. Because of its obvious customer orientation, it is unlikely that the company will require its users to use a centralized system exclusively after such a system has been installed.
- Although IBM and plug-compatible vendors have succeeded in meeting the users' dispatching needs, other mainframe vendors have not been so fortunate. Users of Honeywell equipment, for example, rated dispatching at 7.0 in 1984, down from 7.5 in 1983 despite the fact that response time improved in 1984. By 1984, the company improved and extended service via its National Response Center. Sperry's rating fell by an even greater margin under similar circumstances.
- It is obvious that users are requiring the same high level of dispatching from the new centralized system as from the old local system. Despite these problems, however, vendors continue to centralize and integrate their dispatching systems, citing profitability and efficiency as the major reasons. It appears that the way in which a service vendor promotes the new dispatching system will be instrumental in user acceptance.

## B. SPARE PARTS

- Spare parts represent a huge investment for all of the large-scale system vendors. Since this investment can amount to as much as 30% of the gross service revenue, efficient management of spares can mean the difference between a profitable and an unprofitable service organization. Obviously, a vendor with a large installed base or a geographically concentrated group of users has the advantage in parts distribution; however, most large-system vendors indicated they were going to be affected by the following logistics support trends:
  - An increase in the installed base, though not necessarily geographically concentrated.
  - Increased cost of parts resulting from component exchange rather than on-site repair.
  - Greater integration of components resulting in more expensive "modular" spares.
- Some of the typical problems encountered in parts inventory control are shown in Exhibit IV-4.
- All of the large-system vendors have established a distribution network, usually based on centralized warehouses. Exhibit IV-5 describes the spare parts distribution system of the major large-scale vendors. Most of these vendors acknowledged that individual parts are extremely expensive, so only a limited number of parts are available at any one time. Parts centralization is seen as the answer to this problem.
- The increasing cost of parts seems to be a technological trend. Very large scale integration can result in circuit boards that cost over \$25,000.



## EXHIBIT IV-4

### LARGE-SCALE SYSTEM TYPICAL FIELD SUPPORT INVENTORY PROBLEM AREAS

INVENTORY
Lack of Timely and Accurate Data on Stock Levels
Insufficient Use Tracking
Poor Stock Level Forecasting

REVENUE
Poor Control Over "Give-aways" by Field Personnel
No Return Incentive for Loaners to Customers
Inaccurate and Late Service Reports for Billing
Lack of Clear Parts Warranty Policy
Inadequate Costing Methods for Carrying and Obsolescence Charges

RESOURCE MANAGEMENT
Insufficient Control Over Spare Parts Distribution and Replenishment
Frequent Part Unavailability on Service Calls
Poor Tracking of Part Performance and Problems



# EXHIBIT IV-5

## LARGE-SCALE SYSTEM SPARE PARTS DISTRIBUTION

VENDOR	DESCRIPTION OF SPARE PARTS DISTRIBUTION SYSTEM
Amdahl	Central storage site in California supports 20 airport storage sites throughout the U.S. Parts are dispatched via Burlington Northern Air Freight. On-site spares also available.
Burroughs	Regional and branch parts depots.
CDC	Regional parts depots.
Data General	Parts stocked to the branch level supported by two regional warehouses (Colorado Springs; Milford, MA).
DEC	Regional parts dispatch.
Honeywell	Two central parts depots (Dallas; Lawrence, MA) support almost 100 regional parts locations with over 1,000 points of supply for parts.
IBM	Automated, centralized dispatch center located in Mechanicsburg, PA supports 21 regional distribution centers.
NAS	Central warehouse located in Sunnyvale, CA support six regional spare parts centers. Selected spares are also available through branch offices.
Sperry	Parts stocked at the branch level.

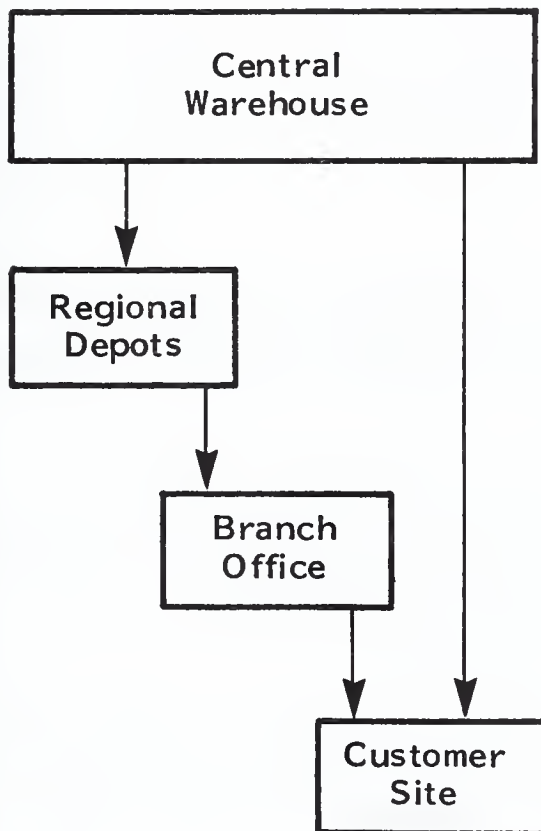
Obviously, vendors must control how these parts are stocked so that they can meet the demands and control the costs.

- Another factor underlying the move toward centralization is the trend toward marketing and servicing foreign-made equipment. NAS, for example, services Hitachi-made mainframes. Because parts must come from Japan, turnaround time on repairs can extend up to six months. A central distribution facility (located in Sunnyvale, CA) is essential for supporting the installed base and yet not overstocking expensive parts. Companies that enter the third-party maintenance market in the future will experience the same logistical support problems that are now being faced by companies like NAS.
- Generally, the large-system vendors have a four-tiered distribution system, as shown in Exhibit IV-6. A central warehouse is the basis of most large-scale parts distribution systems. Such facilities are highly automated and frequently contain extensive parts-tracking data bases in order to handle the huge quantities of parts received and shipped each year. The IBM central facility, for example, handled almost three million parts in 1983.
- Regional parts depots form the next tier of the distribution system. These depots are designed to handle almost all parts requests, generally excluding very expensive and very rare parts. The number of depots varies according to the vendor--IBM, for example, has 21 "Distribution Centers" whereas NAS has six depots.
- Some spare parts are usually stocked at branch offices to facilitate a "quick fix" to a common problem. Typically these parts will include some circuit boards and subassemblies, which would be sufficient to handle 50-70% of service failures.
- The fourth and final stocking location is at the user's site. The majority of users continues to expect on-site storage of spares. Yet, even at large sites this is not economically viable for this service vendor. Vendors report they

## EXHIBIT IV-6

### LARGE-SCALE SYSTEM PARTS DISTRIBUTION

#### Flowchart



#### Inventory Content

Contains at least one of every part. Highly automated and includes extensive parts tracking.

Generally designed to meet 90-98% of parts requests. Usually contains any part that is likely to fail.

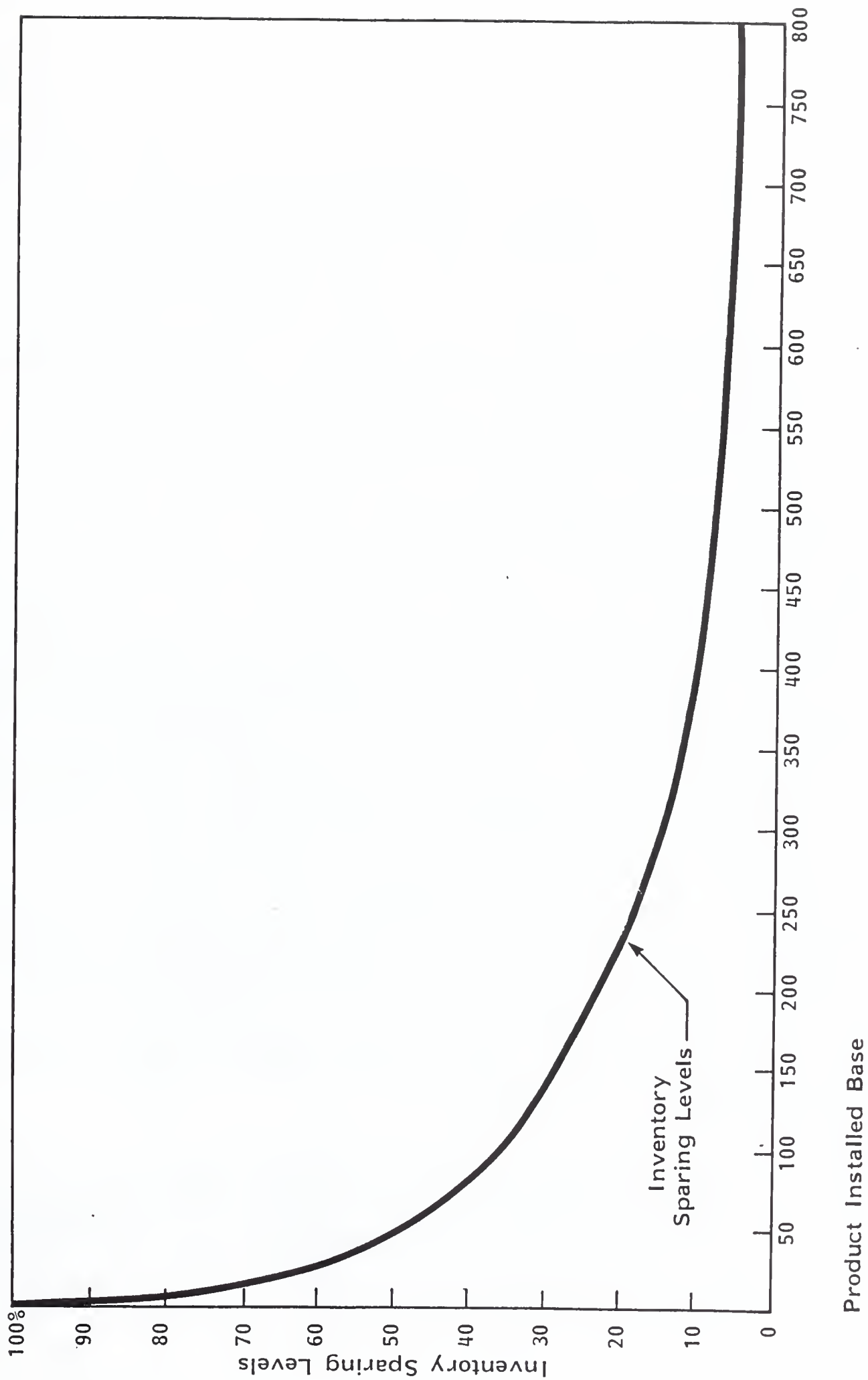
Mainly stocks circuit boards and frequent-failure parts. Designed to repair 50-70% of problems.

Designed to support site-frequent problems only unless customer is willing to purchase spare "kits" or "sets".

are currently cutting back on on-site spares unless the user cannot be serviced efficiently by a regional or branch depot.

- Several of the smaller vendors indicated that manufacturers with a large installed base, such as IBM and DEC, have a built-in advantage in sparing because they can avoid on-site storage. Exhibit IV-7 demonstrates that when the installed base is small the vendor must maintain an inordinately high sparing level (as a percentage of the base). As the installed base grows, the inventory sparing levels will fall as a percentage of the installed base.
- The vendors interviewed by INPUT reported that the move away from on-site storage of parts to centralized depots was primarily an economic decision. However, these vendors recognize that users require rapid access to parts, and they have acted accordingly.
  - Amdahl stores parts at Burlington Northern Airfreight depots, which are located at airports throughout the U.S. Amdahl guarantees two-hour delivery of parts.
  - Data General has over 100 local offices that stock parts. The company also has a toll-free telephone number so customers can order parts directly from the centralized warehouse.
  - DEC initiated its "DECmailer" service in 1984—a mail-in parts depot for users who service their own equipment. DEC has over 1,100 subassemblies in stock.
  - Honeywell initiated the "Logistics Inventory Data Systems (LIDS)" in late 1983. LIDS is a parts-tracking system that allows service personnel to access parts at hundreds of locations nationwide. In addition, Honeywell stocks parts in mobile vans in 30 metropolitan areas in the U.S.

SPARE PARTS INVENTORY LEVELS



- Exhibit IV-8 clearly shows that, in spite of these impressive service offerings, many large-system users still require on-site storage of spares. Actually, vendors have recognized that users are not necessarily demanding on-site spares but rather want immediate access to spares. IBM, for example, has a much lower percentage of users that require on-site spares than do other plug-compatible service vendors. This is primarily because IBM has developed an extensive parts distribution network that meets users' parts availability requirements. Sperry and Burroughs, on the other hand, have a substantial number of users who feel that parts availability is a serious problem—even though relatively few of their users require on-site spares.

### C. REMOTE SUPPORT SERVICES

- Virtually all of the large-system service vendors said that remote support is essential to improving service and containing maintenance costs. One vendor reported that the largest productivity improvements in the department resulted directly from remote diagnostics and support. That same vendor doubted seriously whether the company could remain in the service business were it not for the efficiency of remote support.
- Vendors report that the advantages of remote support far outweigh the disadvantages, as shown in Exhibit IV-9. The primary advantage cited by all the vendors interviewed by INPUT was the ability to improve response time by initiating diagnostics at the time of the initial problem call. DEC, for example, was advertising—as early as 1980—a 15-minute response time as a result of remote support.
- Improved repair time was also cited as an advantage of remote support. Vendors reported that an increasing number of "fixes" on hardware and software are now being made from remote locations without involving an on-site FE. Amdahl, for example, reports that over 50% of problem calls can now be



# EXHIBIT IV-8

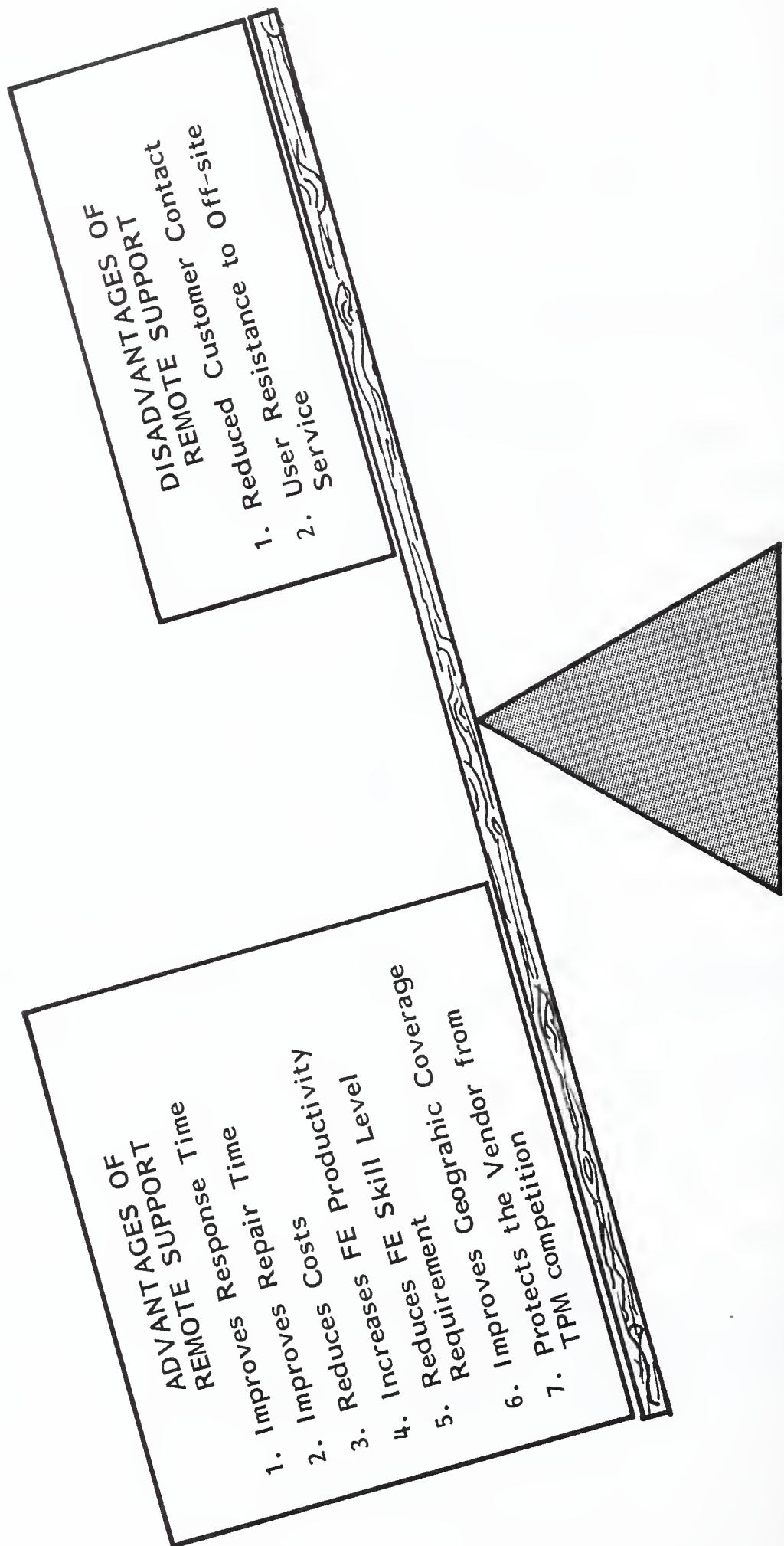
## LARGE-SCALE SYSTEM USER REQUIREMENTS FOR SPARE PARTS

VENDOR	PERCENT USERS WHO HAVE A REQUIREMENT FOR ON-SITE SPARES	PERCENT USERS WHO FEEL PARTS AVAILABILITY IS A SERIOUS PROBLEM
Amdahl	80.0%	10.0%
Burroughs	51.6	12.9
CDC	61.1	11.1
Data General*	20.0	20.0
DEC*	34.1	12.2
Honeywell	63.6	13.6
IBM	52.9	0.0
NAS	72.2	5.5
Sperry	40.4	13.5

\*Large Minicomputers

EXHIBIT IV-9

LARGE-SCALE SYSTEM VENDOR ATTITUDES TOWARD REMOTE SUPPORT



100% of Large-System Vendors Offer Remote Support

resolved before the FE arrives and that the company delays FE dispatching to avoid wasted on-site calls. In addition, repairs are expedited because the FE knows what spares to bring along as a result of remote diagnostics. Honeywell operates "Technical Assistance Centers" throughout the U.S., and TAC personnel can dispatch parts when the FE is dispatched, thereby reducing delays in parts availability.

- Reducing no-fault calls, callbacks, and on-site calls in general results in a much more efficient application of the FE's time and thereby increases productivity. In addition, the skill level required of the FE is reduced because the FE is more easily supported by experts at remote support centers.
- Another advantage of remote support is the protection it provides to the vendor's installed base, particularly from third-party maintenance competition. As dependence on remote support grows, proprietary diagnostic and dispatching software will increase in importance. Competitive service vendors will be forced to license this software from the manufacturer or to develop their own diagnostics. In either case it places the third-party vendor at a competitive disadvantage.
- Although remote support offers a number of economic and performance advantages to the service vendor, there are some disadvantages as well. These disadvantages can be divided into two basic areas:
  - Reduced customer contact and "hand holding."
  - User resistance to off-site service.
- Reduced customer contact (due to increased remote support) is a serious problem, because the vendor may lose knowledge of revenue-generating opportunities and will almost certainly alienate customers that require extensive "hand holding." Lost opportunities will result because the vendor's FE will no longer be on hand to offer advice and, more importantly, to capitalize

on potentially valuable sales leads. Because the FE is one of the vendor's most important representatives at the customer's site, reduced contact means reduced vendor representation.

- Clients who require on-site support are nevertheless likely to be alienated by extensive use of remote support. INPUT has interviewed numerous users with multi-mainframe sites who regard an on-site FE as a measure of prestige. There are also many users who "grew up" with on-site FEs in their data processing departments. These users typically expect the vendor to continue on-site support. Finally, there are users who simply require a good deal of hand holding.
- Users with critical applications most frequently fit into this category. If the vendor replaces the on-site FE with remote support, users are likely to become dissatisfied at the loss of personal contact—even if the support from remote locations is superior to on-site service.
- The second major disadvantage to remote support is user resistance to off-site support. Exhibit IV-10 indicates that users by and large have a low opinion of remote diagnostics. For example, only 31% of Sperry users require remote diagnostics. In addition, users clearly do not want to be involved in remote diagnostics. Sperry users ranked user involvement in remote diagnostics at 4.6 (in contrast to the 8.4 rating of traditional service where the user is not involved in the diagnostics process).
- Vendors recognize that users are concerned with several different issues apart from the technological complexities of remote support. First, users are concerned with the security of their data, which could be violated from unauthorized remote access. Second, many users feel that it is their responsibility to understand at least the problem determination process on their system. These users are typically familiar with traditional diagnostic procedures but feel excluded from the interactive diagnostics between the remote expert and the system.

# EXHIBIT IV-10

## LARGE-SCALE USER ATTITUDES TOWARD REMOTE DIAGNOSTICS

VENDOR	PERCENT OF USERS WHO REQUIRE REMOTE DIAGNOSTICS	USER RATINGS* OF CUSTOMER INVOLVEMENT IN REMOTE DIAGNOSTICS	
		HARDWARE	SOFTWARE
Amdahl	70.0%	5.7	5.6
Burroughs	41.9	6.3	6.8
CDC	25.0	5.5	6.2
Data General	48.0	6.3	6.2
DEC	78.0	7.1	5.9
Honeywell	72.7	6.2	6.3
IBM	72.5	5.5	5.4
NAS	63.9	4.7	4.6
Sperry	30.8	4.6	5.1

\* 1 = Low, 10 = High



- Several vendors expressed the opinion that it is not security that underlies users' reluctance to support remote diagnostics, but rather a misunderstanding of the diagnostics process. Users attempting to conceal their ignorance of remote diagnostics would therefore not support it. This opinion was confirmed by INPUT interviews among experienced users of remote support. These users typically give high ratings to remote services and many indicate they now prefer remote support to on-site support because of greater parts accessibility and improved escalation procedures.
- There is no question that large-system service vendors are going to increase their reliance on remote support. INPUT estimates that 80% of large systems currently produced are remote support compatible; by 1987 this figure will jump to almost 100%. User acceptance of remote support will be the determining factor in the implementation of remote services.
- Vendors that successfully educate their users to the advantages of remote support will be much more likely to benefit in user satisfaction and service revenues from this technological breakthrough.

#### **D. ALTERNATIVE METHODS OF MAINTENANCE**

- As noted above, remote support services were developed by vendors primarily to improve service, reduce costs, and thereby increase revenues. Remote support is just one of several different alternative maintenance methods that are now being offered by large-system service vendors. Other alternatives are listed in Exhibit IV-11.
- Fifty-six percent of the large-system vendors interviewed said that they offer their users a "menu" of service options, as opposed to standard maintenance contracts. Users are allowed to select the quantity and level of service they



# EXHIBIT IV-11

## ALTERNATIVE METHODS OF MAINTENANCE

SERVICE	PERCENT OF VENDORS CURRENTLY OFFERING SERVICE	USER ATTITUDES TOWARD SERVICE (1-10) *
Traditional, On-Site Maintenance (User not involved)	100%	8.4
Service "Menu"	56**	N/A
Remote Diagnostics	100	5.7
User Involvement in System Repairs	33	4.8
Depot Maintenance	67	3.5
Third-Party Maintenance	44	N/A

\* 1 = Low, 10 = High

\*\* Includes standard contract options, not individually negotiated service contracts.

require. DEC, for example, offers a variety of service options, ranging from 24x7 on-site service to training support for users who want to maintain their own equipment.

- Only three of the nine large-system service vendors interviewed by INPUT encouraged user involvement in system repairs, and relatively few users were interested in this option. Several vendors, however, indicated that increased user involvement in diagnostics and repairs was only a matter of time. Progress is currently being hindered by user attitudes and by the high level of technical knowledge required for hardware maintenance. Increases in the user's technical competence and in hardware modularization will encourage user involvement in system repairs. Vendors point to user involvement in software support as evidence of the growing trend toward user involvement.
- Although it seems likely that large-system users will try to improve overall system availability by performing some on-site servicing of equipment, it is extremely unlikely that they will take advantage of the numerous "depot" services offered by large-system service vendors. Sixty-seven percent of these vendors offered depot service that could be used by the large-system customer. Users reject the depot alternatives for several reasons:
  - They don't have the staff to transport equipment.
  - In many cases, the equipment is too bulky to transport.
  - The user needs a faster turnaround time than is available through a depot.
- The Burroughs depot service is typical: service is available at 130 field offices throughout the U.S. and is limited to a few specific products such as terminals. Work is done by contract or on a time-and-materials rate basis. Turnaround time is about three days.

- A number of vendors, such as DEC and Honeywell, are attempting to overcome user resistance to depot service by providing courier transportation of failed parts to depots and/or exchanging parts at the user's site. At best, these are stop-gap measures designed to maintain the depots until they are truly commercially viable. Several vendors indicated that the depots would not be profitable until on-site service costs increased substantially.
- Third-party maintenance, the last alternative method of maintenance listed in the exhibit, is discussed in the next section.
- As the cost of traditional, on-site maintenance continues to grow, vendors will seek out alternative service delivery methods that will reduce expenditures and increase revenue. Remote diagnostics are being introduced for this reason. In the future, increased user involvement in repairs and depot maintenance will be the predominant service delivery modes, particularly as vendors become competitive in the service market.

#### E. THIRD-PARTY MAINTENANCE

- One of the major services trends in 1983/1984 was the growth in manufacturer-supplied third-party maintenance (TPM). Five of the top nine large-system service vendors now have third-party maintenance policies and at least two other vendors are seriously considering offering this service.
- Vendors report that third-party maintenance is being promoted for the following reasons:
  - TPM increases service revenues.
  - Existing services staff can be utilized more efficiently.

- Many vendors have some TPM experience as a result of informal national account agreements.
- TPM allows the vendor to control the service account.
- TPM leads to increased customer satisfaction.
- INPUT found that although most vendors cited increased customer satisfaction as their ultimate goal in offering TPM, more efficient account control was the real motivating factor in vendors' decisions to implement TPM. Vendors interviewed said that they planned to service only complementary products, i.e., products not competitive with the vendor's own product offerings. By servicing only noncompetitive products, vendors hope to maintain control of each account without losing their own product sales.
- DEC and Honeywell, for example, have indicated that they will service complementary rather than competitive products. NAS, on the other hand, has announced an account control package called the "Total Support Package," which does cover service on competitive products, including IBM, Amdahl, CDC, and Magnuson mainframes.
- Users typically are searching for improved service on mixed-vendor systems and turn to third-party vendors that can promise better system availability. There continues to be a great deal of user interest in third-party maintenance, as shown in Exhibit IV-12. Ninety percent of DEC users, for example, are currently using TPM or are considering using it. Given their users' expectations, it is not surprising that DEC has one of the most extensive TPM programs.
- Specific TPM features required by large-system users include:
  - Extensive hardware support.

# EXHIBIT IV-12

## LARGE-SYSTEM USERS CURRENTLY USING OR CONSIDERING USING THIRD-PARTY MAINTENANCE (ON ANY PIECE OF DP EQUIPMENT)

	PERCENT CURRENTLY USING TPM	PERCENT NOT NOW USING BUT CONSIDERING USING TPM
Amdahl	20.0%	46.7%
Burroughs	41.9	10.5
CDC	36.1	29.2
Data General	32.0	47.1
DEC	41.5	47.8
Honeywell	15.9	45.9
IBM	11.8	41.3
NAS	25.0	44.0
Sperry	7.0	30.6

 More than 2/3 of users are currently using or have considered using TPM on some piece of DP equipment.



- Improved response time.
- A good reputation for service.
- Some third-party maintenance features are not judged to be important to users.
  - The price of TPM does not have to be lower than manufacturer service as long as TPM meets user expectations.
  - Software support is not required.
  - System guarantees from TPM vendors are not needed, according to users.
- The four vendors that now offer TPM service (plus Amdahl) are listed in Exhibit IV-13. Amdahl is included because it provides some site management services to users. As noted above, both DEC and Honeywell offer "complementary" TPM service, while NAS and CDC also service competitive products.
- Vendors report that there has been a high level of interest in TPM services from both users and other manufacturers. Honeywell, for example, originally announced third-party maintenance in December 1983, and by May 1984 had signed service agreements with six vendors (Printronic, Pencept, Coleco, Racal-Redac, Formative Technologies, and Zentec). DEC and NAS have also reported extensive user interest in their TPM announcements.
- Several vendors appear to be considering third-party maintenance primarily because of the potential revenues. Problems in support (e.g. training, diagnostics, and parts) and in generating a "critical mass" of customers are preventing these service vendors from making a move to TPM. INPUT estimates that in a mature TPM market vendors will need at least a 15% market share in order to make TPM profitable.



# EXHIBIT IV-13

## LARGE-SCALE SYSTEM VENDORS OFFERING THIRD-PARTY MAINTENANCE

VENDOR	DESCRIPTION OF THIRD-PARTY MAINTENANCE SERVICE
Amdahl	Will not perform service on non-Amdahl equipment, but will perform problem determination and other site-management duties.
CDC	Through its "Comma" subsidiary, CDC will service a variety of mini and mainframe computers. A full range of contract and TPM services are offered.
DEC	Will service selected noncompetitive equipment attached to DEC equipment.
Honeywell	Initiated "Total Care" service in late 1983; concentrates on microcomputers, peripherals, terminals, and telecommunications products.
NAS	"Total Support Package," introduced in 1984, covers all IBM and compatible mainframes. The company offers a full range of services, from individual product to total site management.

## F. SINGLE-SOURCE MAINTENANCE

- Single-source maintenance is one step beyond third-party maintenance because it offers true site management whereas TPM is restricted to equipment management. Under single-source maintenance, the primary vendor will subcontract out some services while still maintaining primary service responsibility. The user has only one vendor to call, regardless of who manufactured the equipment. Exhibit IV-14 lists user ratings of the importance of single-source maintenance features. It is not surprising that users feel that the most important feature of single-source maintenance is that it avoids finger pointing.
- Exhibit IV-15 lists user attitudes toward single-source maintenance by vendor. It is interesting to note that user interest in single-source maintenance has been growing fastest among users of IBM-compatible equipment.
- NAS, as noted above, has recently instituted its own single-source maintenance contracts, called the "Total Support Package," to which users have reacted very favorably. Amdahl continues its policy of extensive product and system support, and this too has been very well received by users. Of course, IBM has always been a single-source vendor because it dominates so many data processing market segments.
- Users are interested in single-source maintenance not only because it is more convenient, but also because the single-source vendor can offer better service. When a vendor cannot service its own equipment adequately, there is little interest on the part of the user in having that vendor act as a single-source vendor.
- Burroughs users, for example, reported one of the longest response/repair time rates of all the large-system vendors. Interest on the part of these users in having Burroughs as a single-source vendor fell considerably in 1984. NAS,

# EXHIBIT IV-14

## USER RATINGS FOR THE IMPORTANCE OF SINGLE-SOURCE MAINTENANCE FEATURES

FEATURE	RATING (1-10) *	NUMBER OF RESPONSES
Improved Convenience	7.4	334
Improved Response Time	7.7	334
Knowledge of Site	7.8	335
(Maintenance) Reputation of Single-Source Vendor	7.6	336
Single-Source Maintenance Avoids "Finger Pointing"	8.3	332

\*Rating: 1 = Low, 10 = High.

# EXHIBIT IV-15

## THE IMPORTANCE TO USERS OF A SINGLE SOURCE OF MAINTENANCE

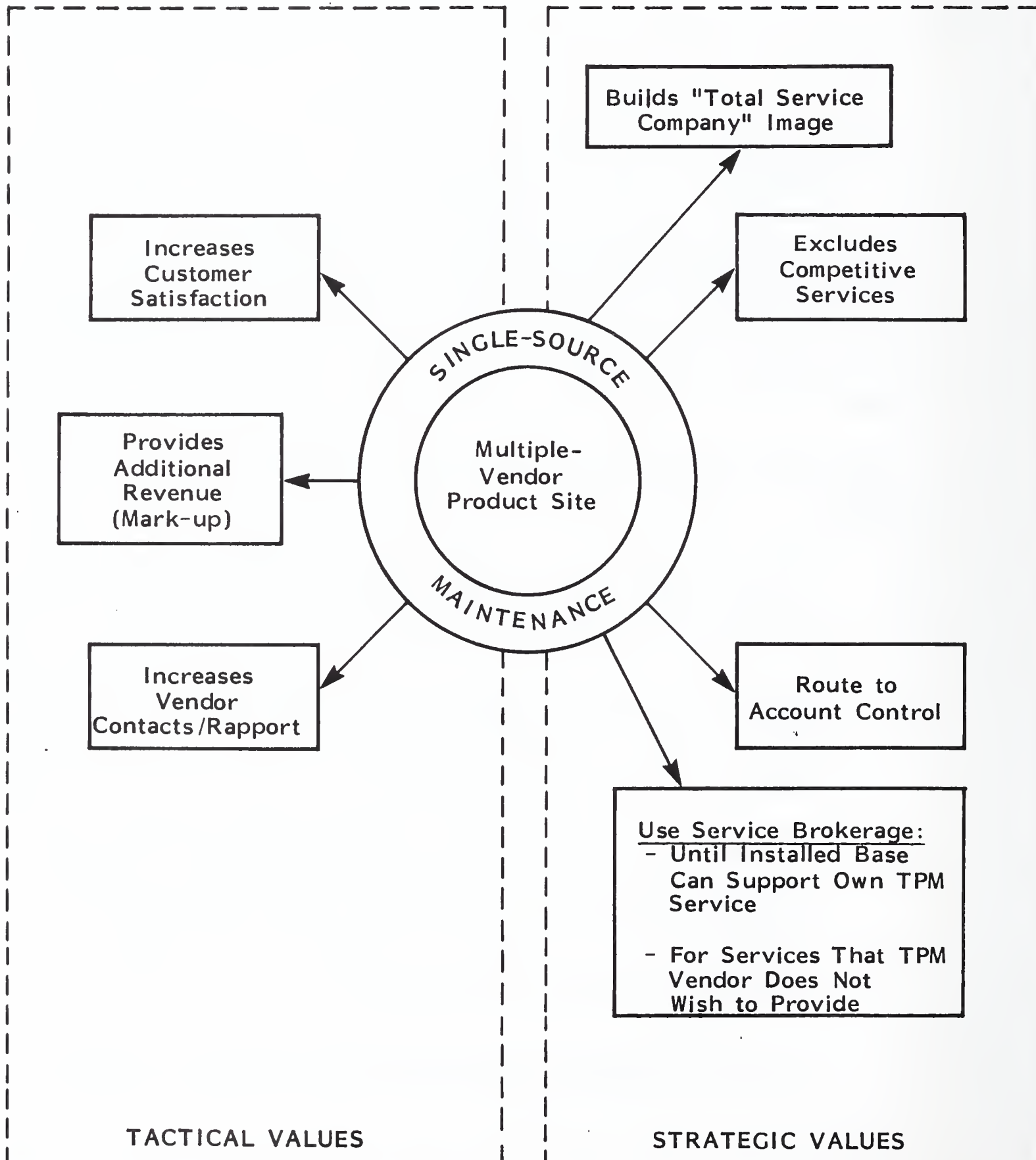
VENDOR	1984 MEAN (1-10)	1983 MEAN (1-10)	1983-1984 PERCENT INCREASE (Decrease)
Amdahl	6.0	4.7	27.7%
Burroughs	7.0	7.4	(5.4)
CDC	7.7	6.9	11.6
Data General	7.5	8.3	(9.6)
DEC	6.6	6.8	(2.9)
Honeywell	7.7	8.3	(7.2)
IBM	6.9	6.2	11.3
NAS	7.7	6.4	20.3
Sperry	7.7	7.3	5.5

on the other hand, had an excellent service reputation on its own equipment and users are anxious to have this superior service transferred to other, non-NAS machines.

- If users are interested in single-source maintenance because of improved service and convenience, then vendors are more concerned about account control and revenue generation. Only two of the vendors interviewed, NAS and IBM, currently offer true single-source maintenance and only NAS offers multivendor system service. All of the vendors interviewed by INPUT, however, view site management as their long-term goal. Single-source service gives the vendor the strategic advantage of controlling the site and determining who provides service. The vendor can subcontract work out to the original manufacturer or to another service agency, or the vendor may provide its own TPM service. If another vendor controls the user's site, no such option exists.
- Exhibit IV-16 lists the principal advantages of single-source maintenance as follows:
  - Customer satisfaction is improved because the user has to deal with only one vendor. There is no "finger-pointing."
  - Revenue is increased. Even when the single-source vendor does not perform the service directly but brokers the service, a 10% surcharge is usually levied for contract management.
  - An option on future service is reserved: if the vendor cannot provide service at that time, then the vendor can reserve the possibility of providing it in the future, while brokering the service in the meantime.
  - Account control is maintained (see above).
  - Competitive comparisons between vendors are reduced or eliminated.



STRATEGIC AND TACTICAL ADVANTAGES OF SINGLE-SOURCE MAINTENANCE



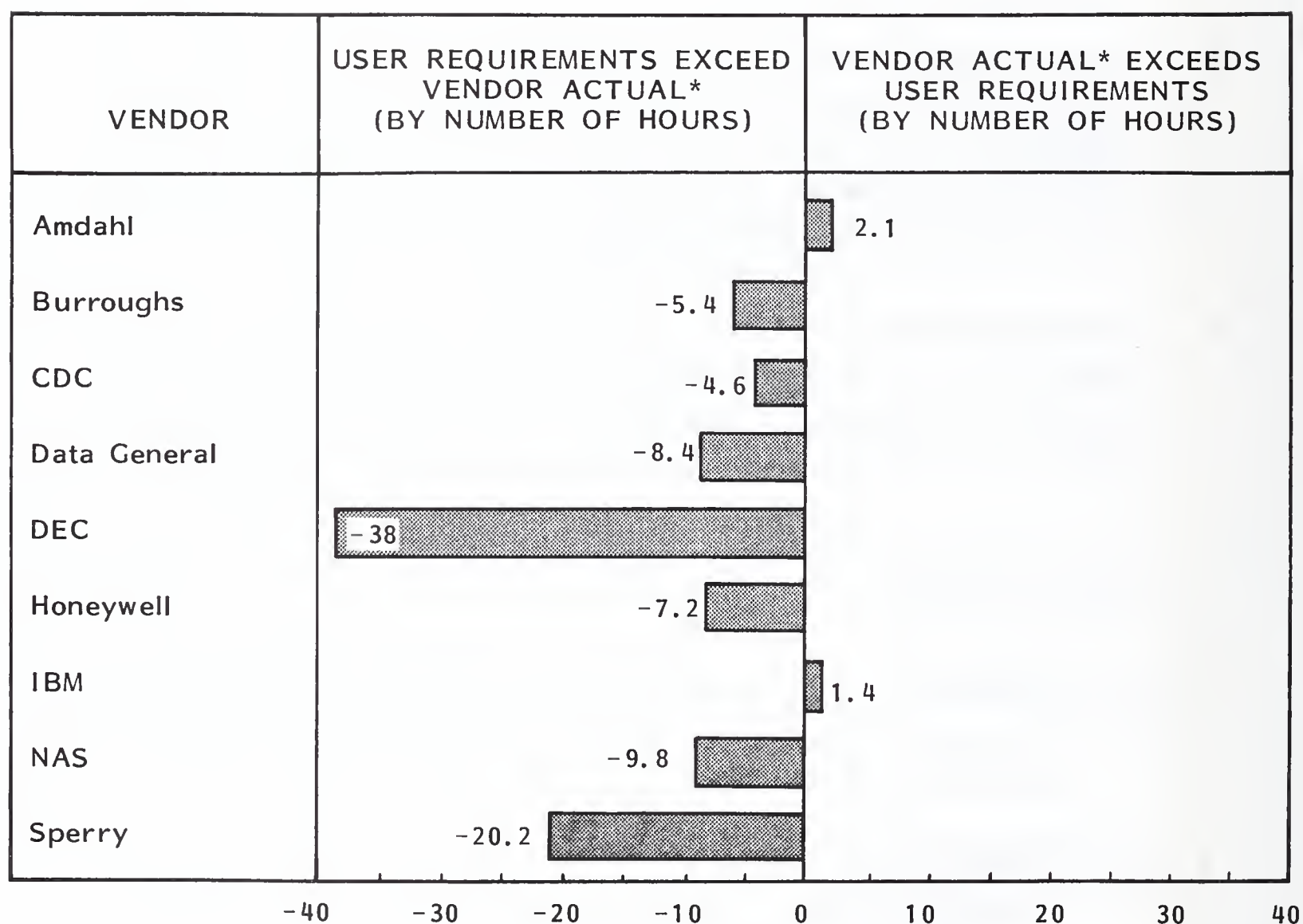
- Staff can be used more efficiently by servicing more equipment at one site.

## G. SOFTWARE SUPPORT

- Software support has become a major issue among users in the 1980s. User expectations for software service are growing substantially, and vendors are searching for new ways to meet these demands. In most cases, service provided by the vendor has not measured up to user requirements, and this causes a great deal of user dissatisfaction with overall service.
- User expectations for software response time and repair time are shown in Exhibit IV-17. As the exhibit demonstrates, user requirements for software service are not being met by the vendors. Only two vendors, Amdahl and IBM, provide total software repair in less time than is required by the user.
- User dissatisfaction resulting from inadequate software support is caused by three basic problems:
  - Software support is coming primarily from remote locations. Users feel their problem is being neglected because they do not see evidence of vendor support once the initial call is made.
  - Software problems must be solved individually—in software repairs there is no equivalent to "board swapping."
  - The current undersupply of software engineers means that trained staff are not always available to respond to user needs.

# EXHIBIT IV-17

## USER REQUIREMENT VERSUS VENDOR ACTUALS FOR TOTAL SOFTWARE REPAIR TIME



\* User Ratings of Vendor Performance

Total Repair Time as Defined by User = Response Time + Repair Time

- Vendor software support has undergone numerous changes in the last 20 to 30 years and some vendors have indicated that software is only just now being successfully integrated into the service department. Some of the small-system vendors interviewed by INPUT still have their software support functions in their marketing departments.
- Although all of the large-system vendors have integrated their hardware and software support divisions into a single department, in many cases these divisions continue to operate autonomously. There has been very little cross-training and/or operational support between the two divisions.
- This lack of interdivisional support is a major cause of software service problems. Users complain that, in some cases, finger-pointing exists between the two support groups within one company! In other cases, the two groups act autonomously in problem determination and solution. The user has to deal with two separate organizations in terms of dispatching and response and repair times.
- Successful software support vendors such as Amdahl and IBM have effectively eliminated the customer's perception of two separate support groups. Amdahl, for example, cross-trains all of its hardware engineers in operating-system service. When a software problem does arise, the on-site FE (or remote center) can call a software expert to assist in a solution. Although the problem may be escalated to several different support groups, the user deals only with the initial contact person (typically the FE).
- IBM was one of the first of the large-system vendors to offer remote support for software service. In the early 1970s the company realized that on-site software support was not economically feasible, and it began to establish an elaborate network of remote support services. Although this network is organizationally and geographically dispersed, user satisfaction with software support has improved primarily because of the quality of service. IBM reports that nine out of ten calls for software assistance in the U.S. are resolved by remote software support specialists.

- The elimination of autonomous hardware and software support groups and the increase in software support (usually from remote locations) are the two key factors in successful software service. All of the vendors interviewed followed this formula to some extent—some more successfully than others.
- Burroughs made a substantial commitment to software support when it established its Software Products and Services Division in January 1983. The division has over 2,000 employees for both application and system software support. Response time for application software problems, according to the company, improved by 30% in 1983.
- Data General only recently (1983) integrated its Software Customer Support Services group into its Field Engineering division. The move was made to centralize support services and has resulted in somewhat improved software support ratings. The company offers three levels of software support, including 24x7 remote support, optional on-site support, and consulting.
- Honeywell has successfully integrated software support through Technical Assistance Centers (TACs) located in Atlanta, Phoenix, and Newton (MA). The TACs were originally set up in 1978 and provide the user with one central support number to call when software problems arise. In addition to the Technical Assistance Centers, Honeywell operates a Remote Support Update Facility designed to support and patch applications software from remote locations. This extensive software support has resulted in one of the best response/repair time ratios among the top nine large-system vendors.
- Overall, only a few of the large-system service vendors have built successful software support programs because they have neglected one or more key components. The key components of a successful software support program include:
  - Remote support capability.



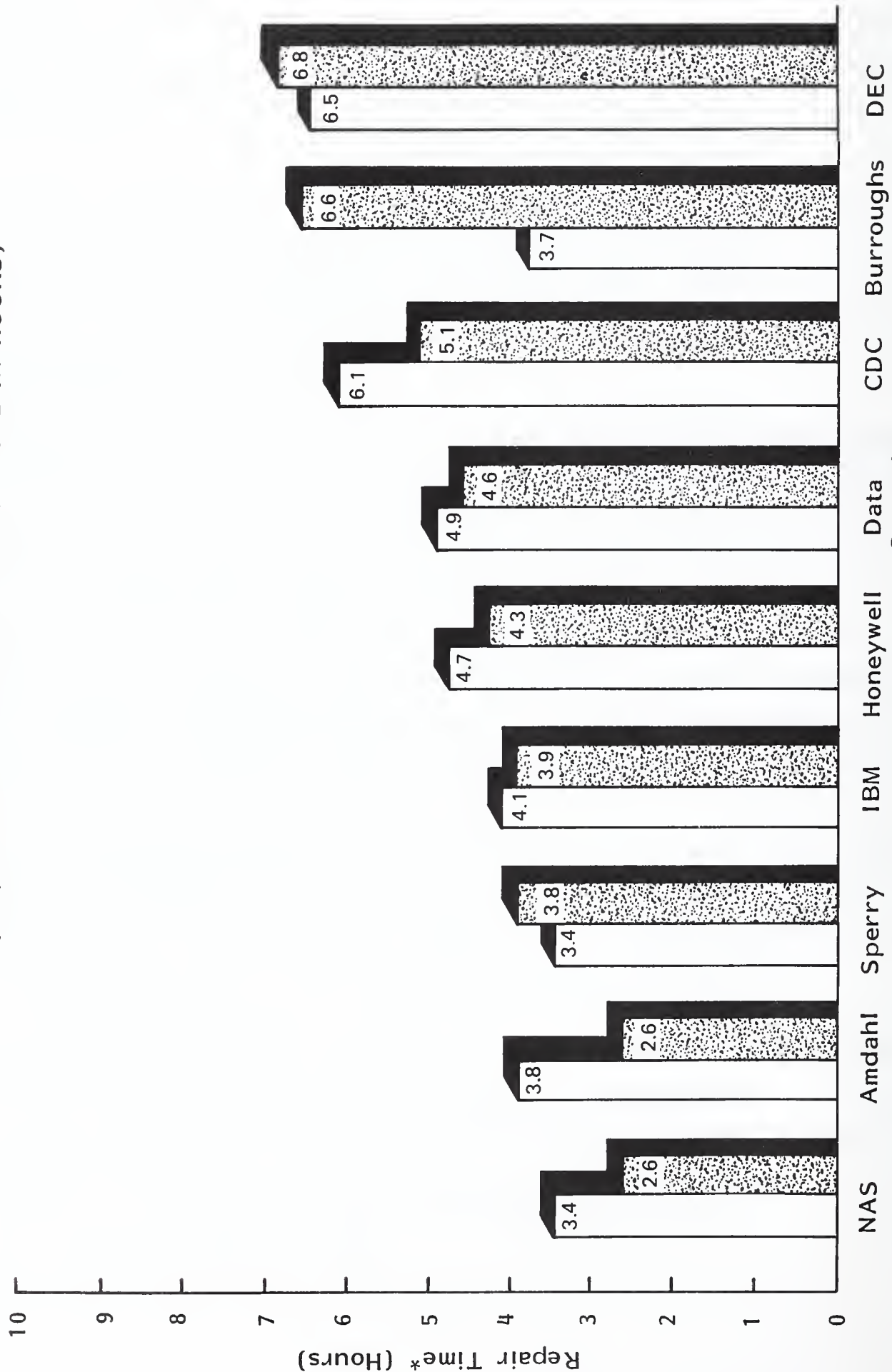
- Strong software staff with a pronounced customer orientation.
- Integrated hardware and software service department. (It is not necessary that all FEs be cross-trained, but the hardware and software groups must work together effectively.)
- Excellent communication between the software support group and the user. This should include continuing updates while the customer's software is being evaluated and patched.

## H. HARDWARE SUPPORT

- Exhibit IV-18 displays the total repair time for hardware (i.e. both response time and repair time). Six of the nine vendors in this exhibit provide a better total repair time than is required by their users. Only Burroughs, DEC, and Sperry failed to satisfy users' requirements for total repair time. Sperry fell behind primarily because of repair delays, whereas DEC and Burroughs failed to meet user requirements because of response delays.
- Several vendors listed in the exhibit succeeded in closely matching actual service with user requirements—that is, neither failing to meet the users' needs nor overly exceeding them. A good guideline is to beat the users' requirements by no more than 10%.
- Vendors with the best MTTR according to this criterion include:
  - Honeywell: actual MTTR of 9% better than required.
  - Data General: actual MTTR of 6% better than required.

# EXHIBIT IV-18

## HARDWARE TOTAL REPAIR TIME USER REQUIREMENTS VERSUS VENDOR ACTUALS (SEQUENCED BY ACTUAL REPAIR TIME IN HOURS)



□ = User Requirement    ▨ = Vendor Actual

\* Repair Time, as Defined by User = Response Time + Repair Time

- IBM: actual MTTR of 5% better than required.
- The average user requirement for mean time to repair hardware for all vendors is 4.3 hours. The average vendor actual MTTR is 4.4 hours.
- As noted above, actual hardware support has been improved by a variety of factors—including remote support, the modular nature of repairs, user self-diagnostics, and actual hardware reliability. Vendors reported that their prime motivation in introducing these technological innovations was to reduce the number and duration of on-site problem calls, and vendors have been successful in this.
- Most of the vendors interviewed by INPUT indicated that the percent of no-fault-found calls has been steadily declining as users become more experienced. The number of callbacks, however, has been increasing (particularly in software) due to the increase in the number of inexperienced field engineers and software engineers.



## **V IMPACT OF CUSTOMER SERVICE MARKETING**





## **V      IMPACT OF CUSTOMER SERVICE MARKETING**

### **A.      THE NEED FOR CUSTOMER SERVICE MARKETING**

- Marketing of customer support, as opposed to selling contract service, is a relatively recent phenomenon. Companies such as HP and Data General have only recently established marketing programs for service, whereas other vendors have no programs at all. Most vendors have initiated a service marketing program but also rely on the traditional sales approach.
- The trend away from "selling" service contracts (and toward marketing customer support) is being driven by the potential benefits of a marketing program. Sales are viewed as a "reactive" approach to meeting customers' service needs--the vendor fills the immediate requirement for such items as two-hour response time or on-site spare parts. A marketing program, on the other hand, is more "proactive"--the vendor finds out what motivates the users' service needs and then anticipates future service requirements.
- Management that does not use a proactive marketing approach will often concentrate service resources on high-demand support such as improving response time. There are several problems with this "putting out the fire" approach:
  - High-demand support areas quickly reach the point of diminishing return, and users simply find another area that must be improved.

- Dealing with each individual support area separately is inefficient.
- Individual problem solving ignores system-level problems, which tend to have a substantial impact on user satisfaction.
- A successful service marketing program will provide several major benefits to the large-system service vendor:
  - It will increase service opportunities because the vendor will have identified service-related trends and can then access previously untapped market sectors.
  - Vendors will be more efficient in their allocation of service resources.
  - Better knowledge of user trends in service will help the vendor to avoid "unpleasant surprises" when introducing new services.
- In addition to the traditional benefit of marketing, there are also some real-world factors that are encouraging the use of marketing techniques, including:
  - Growth in the number of available service options.
  - Increasing competition among service vendors.
  - Geographic dispersal of the customer base.
  - Continuing growth of service price sensitivity by users.
  - Recent successes of customer service marketing by innovative customer service organizations.

- One of the most immediate service-related problems that marketing can overcome is the confusion resulting from the growth in service options. Many of the large-system vendors such as DEC and NAS offer a variety, or "Menu" of services on both their own and third-party equipment. Typically, the vendor will offer a standard level of service and the user will then select extra services depending on need.
  - Data General's Software Product Service Agreement includes three levels of service.
  - DEC offers perhaps the largest menu of options, ranging from full, 24x7 on-site support to backup support for on-site maintenance.
  - NAS's Total Support Package offers a wide variety of hardware, software, consulting, and training services on an equally wide variety of equipment.
- What differentiates these "menu" services from the various service contracts that were offered in the past is the flexibility they provide to the user—in effect, individual users can write their own maintenance contracts depending on the needs of their particular systems. As the number of service options has increased, so has system hardware and software requirements, price of service, and availability by geographic area. Customer service marketing is needed to better inform the user on the benefits of each of the various options.
- The increasing reliance on computers and the geographic dispersal of customers has put a strain on many of the large-system sales networks. Users complain that salespeople are inaccessible, particularly when a new product or service is introduced. Several vendors have utilized direct marketing and telemarketing techniques to fill the void created by the number of reduced direct sales contracts.

- Finally, marketing of service is growing because of the success these techniques have enjoyed in the last two to three years. Numerous companies, including Xerox, NAS, DEC, and Honeywell, have initiated service marketing programs that have resulted in substantial revenue gains. Service revenue at DEC, for example, rose by almost 30% in 1983, partly as a result of an aggressive service strategy, which depended upon extensive marketing.

## **B. MARKETING MIX—WHAT TO MARKET IN CUSTOMER SERVICES**

- Traditionally, customer service organizations have concentrated on two basic maintenance functions: hardware and software maintenance. Other services, often called "after-sales support services," were available from the vendor but not emphasized.
- As field service organizations evolved into profit centers, maintenance vendors became more aware of the potential value of after-sales support. Not only did some of these nontraditional support services offer huge revenues, but they also produced profit margins considerably above those received from labor-intensive traditional services like hardware maintenance.
- Supplies represent one of the most potentially lucrative support services. Seven out of the top nine large-system vendors (excluding NAS and Amdahl) now sell supplies to their customers. Some companies, such as DEC, have established elaborate direct-mail organizations to sell service, upgrades, and (primarily) supplies. Almost all of the vendors restricted sales of supplies to their current customer base, although it is by no means certain that this will continue in the future.
- Another support service that is becoming increasingly important to users is in the area of consulting. All the large-system vendors interviewed by INPUT are planning to expand their consulting services. Vendors reported that they



do not see consulting, per se, as a revenue source, but rather as a necessary component in the sales process. Consulting is considered particularly important in maintaining the current user base.

- Documentation and training are two other areas that are considered necessary in maintaining the user base. Overall, large-system users are dissatisfied with documentation, and although training received higher ratings, the proliferation of independent training companies indicates that the user demand for training is still not totally satisfied. The investigative nature of marketing is particularly important in this area because the vendor must know what specific user documentation and training needs exist before the vendor can design solutions.
- Although after-sales support services are growing in importance to users, it is still traditional hardware and software maintenance that ultimately sets satisfaction levels. Exhibit V-I lists extended services for which users are willing to pay a premium over the Basic Monthly Maintenance Cost (BMMC). Occasional shift coverage and standby coverage are two of the most important services for which users would be willing to pay a extra premium and therefore could be marketed the most easily. Large-system users perceive these services as essential to maintaining high system availability levels and are willing to pay premiums of up to 50% over BMMC.
- Other service areas that are highly valued by users are mean time to respond and mean time to repair. Users are less interested in service guarantees (such as guaranteed repair time) in 1984 than they were in 1983. Both vendors and users regard guarantees as basically a marketing tool indicating vendor confidence in the product. Users see little or no advantage in guarantees because guarantees do not compensate users for losses incurred by excessive downtime.
- Large-system vendors interviewed by INPUT were divided on the issue of guarantees. Two-thirds of the vendors indicated that guarantees were almost



# EXHIBIT V-1

## 1984 USER REQUIREMENTS FOR EXTENDED SERVICES AND ATTITUDES TOWARD PREMIUMS

EXTENDED SERVICE	PERCENTAGES OF RESPONDENTS REQUIRING EXTENDED SERVICE	PERCENTAGE OF AVERAGE PREMIUM RESPONDENTS WILLING TO PAY OVER BASIC MAINTENANCE
Standby Coverage During Critical Periods	49.0%	10.9%
Guaranteed Uptime	36.5	7.8
Guaranteed Response Time	61.3	5.1
On-Site Spare Parts	53.3	2.6
Remote Diagnostics	55.8	2.8
Preventive Maintenance and Field Changes During Off-Prime Hours	82.0	4.7
Occasional Shift Coverage	53.1	6.8
Full-Time, On-Site Service Engineer	32.3	7.1
Guaranteed Repair Time (Hardware)	39.2	8.4
Guaranteed Turn-around on Software	28.0	20.1

 Over 50% of Large-Systems Users Require This Service

a "nonissue"--that users were looking for actual performance and not just guarantees. Several vendors actually saw guarantees as a negative factor, believing that the vendor was trying to overcompensate for poor performance in the past. Most of the vendors indicated that guarantees were available on an individual contract basis, but that there was very little user interest in this option.

- Determining what the marketing mix should be and which support services should be emphasized is essential to developing a successful marketing plan. Obviously, the variety or menu of services offered will affect the mix, but vendors must understand user needs when determining the market plan. Simply promoting a service will not necessarily increase user satisfaction, particularly if that service is not perceived by the user as needed.

### C. SALES AND CUSTOMER SERVICE MARKETING OF MAINTENANCE

- Traditionally, field services have been marketed through sales departments, primarily because sales had the necessary organization and skills to distribute information effectively. Many field service personnel felt, however, that because of the negative connotations associated with service, sales was not committed to selling service—that is, service is not needed unless the equipment breaks...and new customers don't want to hear about equipment failure.
- As customers became more sophisticated, vendors realized that service should be treated as a potential sales feature. Service soon became a profit center and service departments began to push for greater promotion and advertising of service options. Sales departments, service argued, were still committed to selling "the box" first and service second (if at all). Several vendors pointed out an inequitable incentive plan that did not adequately compensate salespeople for signing service clients.

- In the mid-1970s several companies (such as DEC and Hewlett-Packard) introduced marketing functions within their service departments. The plan was not to duplicate the sales effort, but rather to supplement it. To this end, service departments devised direct-mail and telemarketing programs to reach market segments that may have been neglected by the traditional sales techniques.
- It is important to recognize that none of the service vendors interviewed by INPUT plans to start giving FEs sales roles. The following is a list of reasons for this exclusion:
  - The average FE does not want to sell and probably does not have the personality to be successful in sales.
  - Putting the FE in a sales role would compromise the FE's service integrity in the eyes of customers.
  - The FE already has a full work load, and adding another duty will only result in reduced service effectiveness and lower customer satisfaction.
- Vendors recognize that putting an FE in a sales role would alienate many users, as indicated in Exhibit V-2. A majority of users is opposed to the FE being involved in any aspect of sales, including supplies, add-on equipment, or software. Users see a conflict of interest, particularly when FEs sell equipment that they will also be responsible for servicing.
- A minority of users were accepting of an FE in a sales role when they (the users) perceived that this was simply a convenience offered by the vendor. Such is the case when the FE takes orders for upgrades or service contracts. Users do not view this as sales because they are usually renewing a contract or upgrading a system on a pre-established plan.

# EXHIBIT V-2

## USER ATTITUDES TOWARD FIELD ENGINEER TAKING ORDERS FOR EQUIPMENT /SERVICE

FIELD ENGINEER TAKING ORDERS FOR:	FAVOR (Percent)	NEUTRAL (Percent)	OPPOSED (Percent)
Supplies	27.9%	21.2%	50.9%
Add-On Equipment	29.4	10.2	60.5
New Models of Equipment	22.1	8.4	69.5
Upgrades	39.7	7.0	53.3
Service Contracts	42.2	7.8	50.0
Software	19.7	7.2	73.1



A majority of users is opposed to the FE being directly involved in any sales function.



- Another reason both vendors and users are reluctant to employ the FE in a sales role is the engineers' inability to adequately communicate with the user. Exhibit V-3 lists user ratings of communication between the user and the FE. Users rate the average software engineer at 6.8 on a scale of 1=low, 10=high. Hardware engineers receive a higher average rating (8.0), but this rating is still not acceptable to customers used to a much higher level of communication from the sales rep. Vendors must remember that communication also means listening to users and understanding/interpreting their needs.
- All of the large-system vendors interviewed by INPUT recognized the problems involved in trying to convert the FE into a salesperson. As Exhibit V-4 demonstrates, more of these vendors intend to put the FE in a sales role, but 100% of the vendors report that the FE is involved in some form of support of sales.
- Almost all of the vendors encourage the FE to make goodwill calls on customers. This is seen as essential in promoting user satisfaction with service. Four of the nine large-system vendors reported that they encourage FEs to attend sales meetings. Vendors see this process as a way to help the FE to understand the needs of the users and the requirements of the sales departments. Expanding the role of the FE as a conduit of information between the customer and the vendor (rather than as a salesperson) is seen as an important field service marketing goal.
- In the short term, sales departments will continue to enjoy substantial control over marketing of all products and services. However, a greater involvement on the part of field service in marketing service products is inevitable. Field service offers the technical expertise and motivation to market services and will experience substantial benefits from growth in this area. Other factors that will promote the growth of field service control over their own marketing include:
  - Increasing profitability of service.

# EXHIBIT V-3

## FIELD ENGINEER COMMUNICATION SKILLS AS RATED BY LARGE-SYSTEM USERS

VENDOR	HARDWARE ENGINEER RATING*	SOFTWARE ENGINEER RATING*
Amdahl	8.5	7.4
Burroughs	7.8	6.9
CDC	7.7	5.8
Data General	7.6	6.8
DEC	8.0	6.1
Honeywell	7.4	6.8
IBM	8.2	7.2
NAS	8.9	8.1
Sperry	8.1	6.2

 Indicates User Ratings Have Fallen From 1983 to 1984

Rating: 1 = Low, 10 = High



EXHIBIT V-4

VENDOR ATTITUDES TOWARD THE  
FIELD ENGINEER IN SALES SUPPORT ROLES

SALES-SUPPORT FUNCTION	PERCENT VENDORS INVOLVING FIELD ENGINEERS IN THIS FUNCTION
Making Goodwill Calls	78%
Attending Sales Meetings	44
Negotiating Maintenance Contracts	22
Selling Hardware/Software	0
FE Performs Some Sales Functions	100%

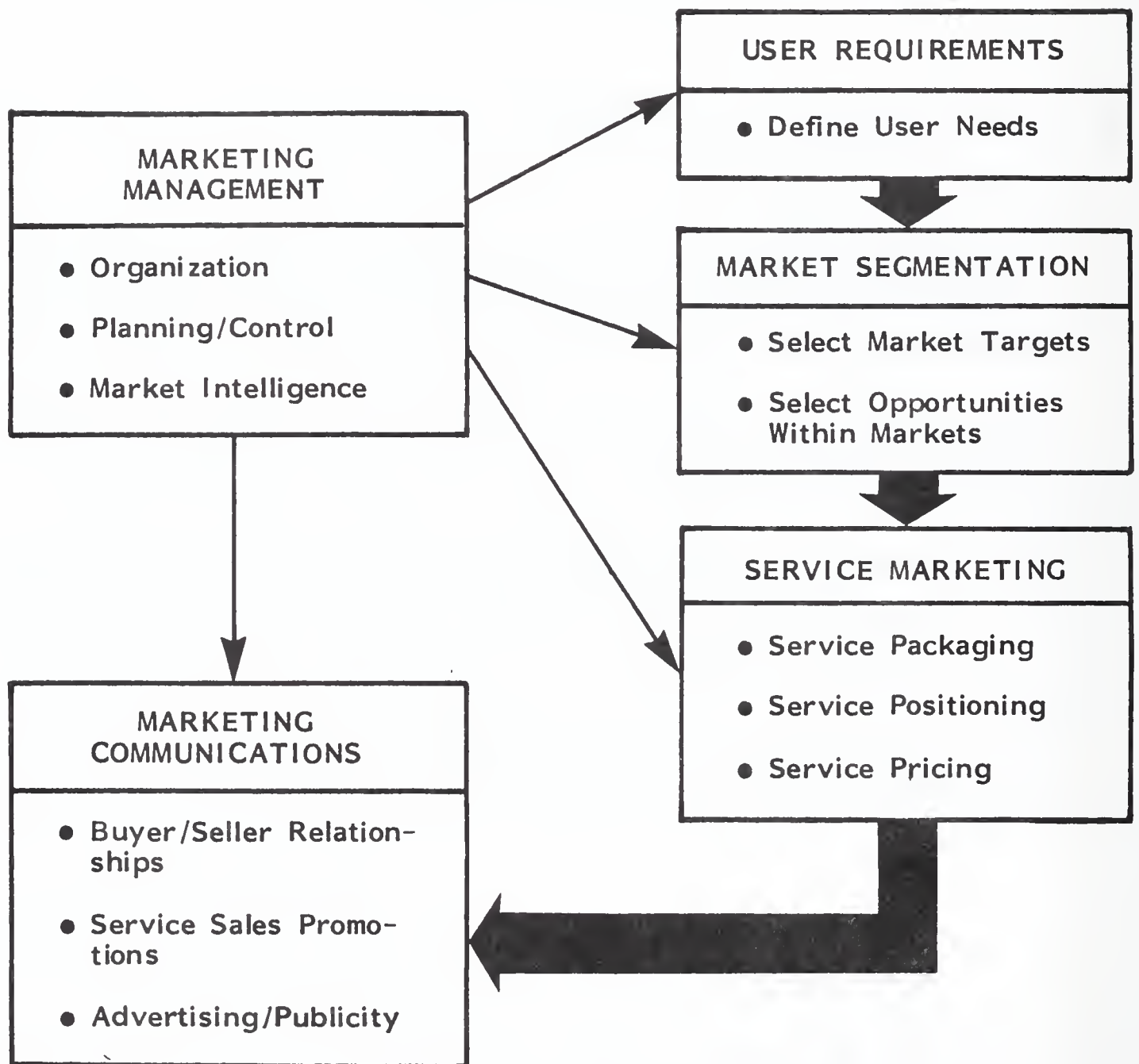
- Expanding the service market, which is unrelated to equipment sales (i.e., third-party maintenance and service).
- Expanded methods of marketing, which do not require an intensive sales force. (telemarketing, direct mail, etc.)

#### D. THE SERVICE MARKETING PROCESS

- The recommended process for service marketing is outlined in Exhibit V-5. It encompasses the definition of user requirements, leading to the need for market segmentations and marketing communications.
- The definition of user needs will not necessarily equate with a definition of the service vendor's offerings.
  - The service vendor should be selective in targeting a vulnerable market that corresponds to either strategic goals or a technical capability within the company.
  - Once achieved, this segmentation of the market should lead to a further segmentation—selecting the best opportunities for the service vendor.
  - After market segmentation, service vendors can proceed to package, position, and price each service that they wish to offer.
- Marketing communication, including service sales promotion and advertising, is the next step in the marketing process.

EXHIBIT V-5

SERVICE MARKETING PROCESS



- The key role played by marketing communications is schematically illustrated in Exhibit V-6. It is a combination of tactical thinking (e.g., franchising and advertising), promotion (exhibitions and seminars), and control (sales costs and performance measurement).

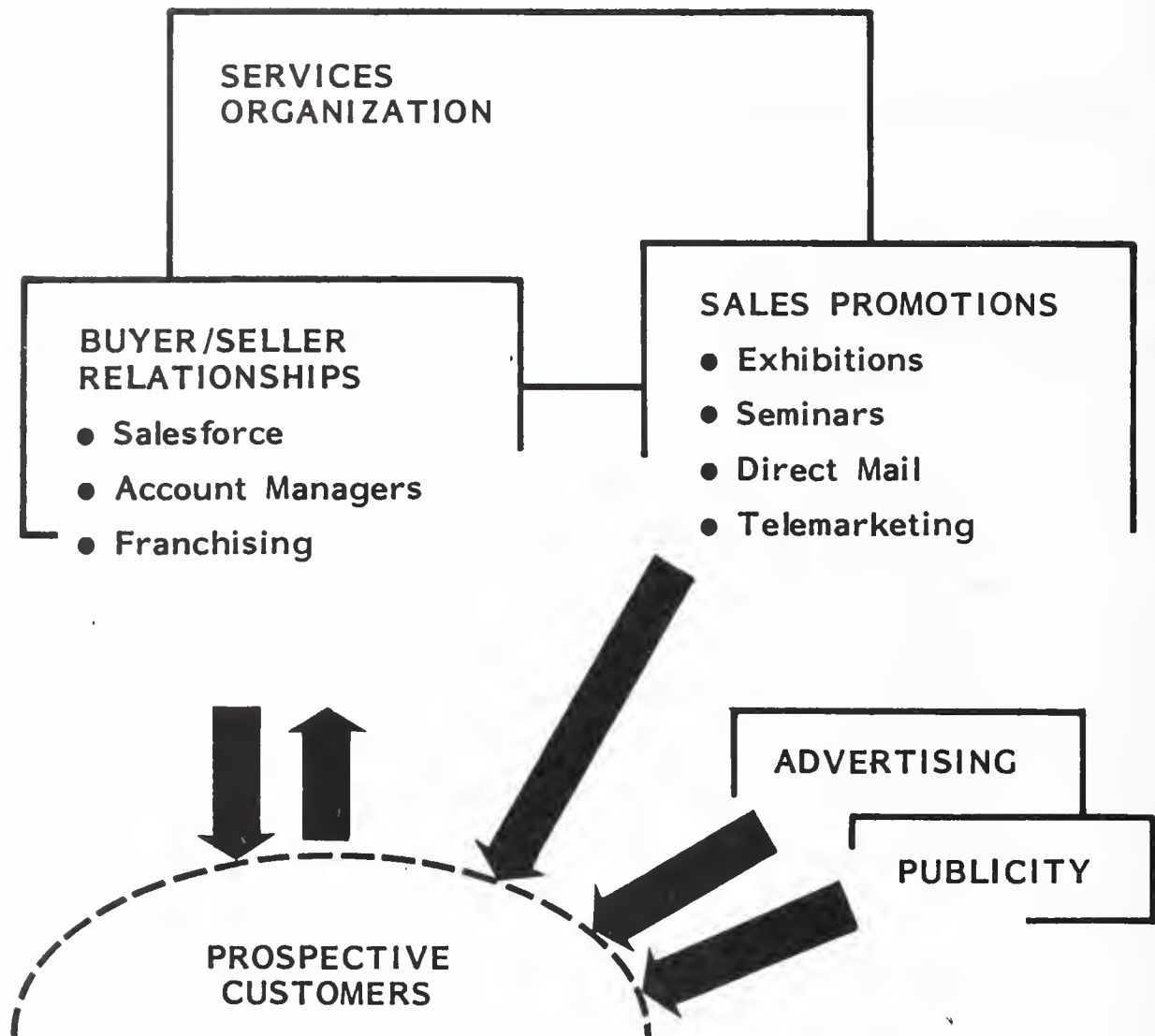
## **E. MARKETING OF SERVICE**

- It is crucial that service vendors develop a marketing plan (based on packaging, positioning, and pricing) once the vendor has segmented the market. Exhibit V-7 summarizes the functions needed to be accomplished.
  - Packaging encompasses the production of descriptive information (such as documentation, promotional literature, and contracts) required to sell the service.
  - Positioning means competitively locating the services offered in the user, dealer, and manufacturer environment. This is an ongoing process that changes as result of the introduction of competitive services or price changes.
  - Pricing should be cost-based but is usually competition-based, and must take into account the value the customer places on the service received.

## **F. TARGETING SERVICE MARKET**

- Each market segment consists of a different set of marketing components, which will vary tremendously according to the needs of that segment. For example, large multisystem user sites requiring extensive third-party mainte-

MARKETING COMMUNICATIONS



GOALS

- Control Costs of Selling
- Emphasize Promotional Methods
- Establish Objectives and Measure Performance

## EXHIBIT V-7

### SERVICE MARKETING DECISIONS

- **Product Positioning Process:**
  - Highlight Gaps
  - Detect Shifts in Markets
  - Provide Clearer Definition of the Business
- **Quality and Service**
  - Importance/Performance Analysis
  - Extensions of Customer Services
- **Pricing**
  - Price Setting Cost-Oriented
  - Use of Customer Value Analysis



nance service will be a considerably different market segment than a user with only one integrated system.

- Selecting a target market is a fundamental step because it defines the potential audience at which the company's marketing program will be directed.
- Service markets can be segmented and then targeted in a number of ways, such as by:
  - Product.
  - Geographical area.
  - Industry.
  - Size of user company.
- The major characteristics of a targeted market segment include measurability, accessibility, substantiality, and actionability.
  - Measurability - Can the segment be identified and the results measured?
  - Accessibility - Can the segment be analyzed with readily available data?
  - Substantiability - Is the segment substantial enough to justify analysis?
  - Actionability - Can practical use be made of information about a particular service segment?
- If these criteria can be applied successfully to a segment, realistic targeting can be very productive, particularly in strengthening existing market positions and developing more effective marketing plans for new products.

## G. MARKETING COMMUNICATIONS—PROMOTION OF SERVICE

- Promotion of service is becoming one of the most dynamic components of the marketing plan. Large-system vendors have been aggressively searching for new or proven methods to promote their service offerings. These promotions can be divided into two general areas:
  - Sales promotions.
    - Direct mail.
    - Telephone sales (telemarketing).
  - Advertising and publicity.
- Sales promotion via direct mail is not a new technique in service, but its use has expanded as a result of the need to reach an increasingly dispersed user population. Companies such as DEC and Honeywell have been particularly effective in using direct mail to promote a variety of new services including parts, supplies, and support services.
- Direct mail often has a poor image as a sales promotion tool because of its low response rate (often under 5%) and because of the relatively poor quality of responses. These problems generally occur as a result of bad planning and a failure to clearly identify target market segments. Lack of experience with the method and an inability to communicate an effective selling message are other common problems.
- Direct mail can be a powerful marketing method for boosting sales of service if the effort is properly managed. Management considerations should include:
  - Properly targeting the markets.

- Development or application of mail lists.
- A clear sales message.
- Salespeople to follow up in a meaningful timeframe.
- Telemarketing is generally an effective way for salespeople to follow up on direct mail leads. Telemarketing offers several advantages over other forms of sales promotion.
  - Telemarketing is less expensive than on-site sales.
  - The customer has access to a greater variety of product offerings.
  - Telemarketing of service is often combined into an integrated remote support service center.
- There are two major drawbacks to telemarketing.
  - Technical knowledge and experience is often required to explain various service failures.
  - The traditional sales force may see telemarketing as a threat rather than a help.
- The efficiency of a telemarketing service is the major cause of growth in this area. Vendors report that telemarketing has been particularly successful for routine sales of items such as supplies and upgrades. Frequently, these were neglected areas because of low profit margins and/or conflicting sales incentives. The use of telemarketing is inexpensive and has permitted more efficient centralized dispatch of products, which, in turn, has improved profit margins.

- Customer satisfaction with telemarketing has been improved due to the vast array of products and services now offered. DEC, for example, offers hardware and software documentation, spare parts, and terminals as part of its DECdirect telemarketing effort. Users enthusiastically support telemarketing at companies such as IBM, DEC, and Control Data, because it provides users with a fast response time on orders and the users (not the salesperson) choose the time to order equipment or supplies.
- The third, and potentially most important, reason that the use of telemarketing has expanded is the growing user acceptance of remote customer services including diagnostics, repairs, and sales. Users have been educated about the benefits of remote customer service in a number of ways—improved response time due to remote diagnostics and centralized dispatching, software fixes via remote downline loading, and now the use of telecommunications to improve marketing and the sale of services. Large-system vendors emphasized that even in their market, which is heavily devoted to on-site support, telemarketing is accepted and even preferred when the benefits of timeliness and lower prices are effectively demonstrated.
- Advertising and publicity make up the second major component of customer service promotion. Although this is a rapidly growing area, it is usually beyond the experience level of the typical field service manager. Growth in this area is usually the result of corporate influence in service marketing.
- Although service-related advertising is increasing, it has not even started to approach expenditures for advertising such items as personal computers, which can equal up to 7% of total revenues. Despite the dominance of affordability as a major influence on advertising, budgets for field services advertising have been increasing. Generally, these ads can be classified into one of two major groups:

- Ads placed in the general literature are designed primarily to promote name recognition and customer interest in the vendor's service offerings.
- Ads placed in trade publications are more specific. These ads usually address particular issues and are aimed at field service decision makers.
- General media advertisements rarely deal with specific field service issues and, as noted above, usually concentrate on building service name recognition. A recent Burroughs advertisement tries to create service product awareness by quoting typical service platitudes like "service is our middle name" and "trust me." The ad then goes on to emphasize that "talk is cheap" and that Burroughs has a proven service record.
- Trade press advertisements are typically directed much more at specific issues than at stimulating general awareness. DEC, for example, emphasized lower prices for VAX diagnostics in a recent ad. Included in the ad was a list of price discount percentages, media required, and specific systems served. This type of advertisement is clearly designed to inform the field service manager of new service-related products.
- Publicity is often ignored as a good source of nonpaid advertising space. The most prevalent publicity activity among service vendors is in press releases, typically covering some new service offering. Technical articles published in the trade press are also a popular form of publicity.
- Besides the fact that publicity is usually cost-effective, there may also be an added value, since a publication using the publicity copy may expand on the original copy and add further information.



## H. INCREASING SALES AND PROFITS

- The overriding role of marketing is not only to bring the vendor's services to market, but to emphasize the systematic pursuit of the markets chosen. Ultimately, a vendor has four options:
  - Using existing services in current markets to extend market penetration.
  - Extending the application of existing services to new markets (market development).
  - Developing new services for existing markets (service development).
  - Developing new services for new markets (diversification).
- It is this market orientation (as opposed to the service orientation found with so many service vendors) that can bring a new way of thinking into the corporate staff. Emphasis should be on areas of high sales and profit potential using a planned, methodical approach.
- Exhibit V-8 summarizes the main benefits of a dedicated marketing group. The key points to remember in implementing any service strategy is the law of diminishing returns.
  - Beyond a certain point, improvements in service produce diminishing returns with respect to customer benefits. That is, the rate of improvement of an element of service to the customer slows beyond a critical point.
  - Customers know this, and once this point is reached, their requirements shift to other concerns. A marketing group is also aware of this and makes sure that these shifts are answered by new services.



## EXHIBIT V-8

### HOW MARKETING CAN INCREASE SALES AND PROFITS

- Places Emphasis on Markets, Not Services
  - Opens Up Bigger Market Potential
  - Focuses on Customer Needs and Wants
- Targets Services in Areas of Highest Sales and Profit Potential
- Emphasizes Profit Planning, Not Just Sales Revenue
- Emphasizes a Planned Approach
  - Systematic Analysis of Market
  - Planned Levels of Achievement
  - Creates Positive Strategies to Overcome Problems
- Balances Company Resources to Optimize Business Effectiveness
- Focuses Attention of All Employees on Sales and Profit Goals
- Encourages Marketing Decisions Based on Fact, Not Fantasy

- Customer advantages sometimes work against vendor benefits. (For example, a loaner unit reduces response time to zero, but increases inventory costs dramatically; at the same time labor costs may be reduced because engineers can be replaced by couriers.)
- It is this constant matching of customer goals with the service vendor's goals (in a way conducive to enhance sales and profits) that justifies the existence and value of a marketing group.



## **VI CUSTOMER SERVICE BUSINESS ANALYSIS**



## VI CUSTOMER SERVICE BUSINESS ANALYSIS

### A. INTRODUCTION

- The purpose of this section is analyze the service business performance of the large-system vendors and review it in the light of normal business practices and goals. Briefly, the picture is one of contrasts. At the lower end of the scale (by service revenue size), huge increases are being achieved by Cray in service revenue growth (33% in 1983), with the installed base doubling between 1981 and 1983 and expected to double again by year-end 1985.
- Cray's service operations showed a loss in 1983 but should break even in 1984. At the high end of the scale, IBM's worldwide service revenue grew 19.4% in 1983 and produced an 18% net profit before tax. (These IBM and Cray figures are based on 1983 annual reports and on the assumption that overheads are allocated in proportion to revenue earned.)
- Generally speaking, customer service operation of large-system vendors are substantially profitable, showing a 17% average net profit before tax (see later discussion in this chapter). This compares slightly unfavorably with the overall profit of these same vendors, which in 1983 showed 19.2% before tax. Leaving IBM to one side, overall profit before tax by large-system vendors was 7.8%.



- Clearly IBM continues to grow in strength, from both service standpoint (where total revenues were up 18% and where gross margin was greater than 50% of revenues) and market share standpoint. The greatest weakness in IBM at present is the total lack of an apparent strategy in telecommunications.
- Exhibit VI-1 summarizes the customer service revenue and total revenue growth picture for large-system vendors in the year ending December 31, 1983.

## **B. PROFITABILITY GOALS**

- All but one of the large-system vendors interviewed by INPUT reported that their service organizations were "profitable." The reader must be careful in interpreting profitabilities, however.
  - Profit and loss control among the large-system vendors is not uniform. Some organizations operate P/L control at HQ only, while others delegate control all the way down to the district office.
  - Profit and loss frequently have different meanings for different organizations. Profit at the district level, for example, usually means gross margin (i.e., revenue minus direct costs) and rarely means net profit (net margin minus allocations).
  - Cost centers, even among large-system vendors, are not obsolete. In many cases it makes sense to operate new branches initially as cost centers, where the emphasis is on setting up a responsive service organization.
- Vendors typically cited two major reasons for increases in profitability:

EXHIBIT VI-1

KEY LARGE-SYSTEM VENDORS'  
1983 SERVICE REVENUE

Company	Worldwide Information Systems Revenue (\$ Millions)	Estimated Worldwide Customer Service Revenue (\$ Millions)			Customer Services Growth Rate (Percent) 1982-1983	Customer Service as Percent of Total Revenue 1983
		U.S.	Foreign	Total		
Amdahl	\$ 778	\$ 84	\$ 55	\$ 139	7%	18%
Burroughs	4,390	643	430	1,073	4	24
CDC	3,508	251	52	303	6	9
Cray Research	170	16	3	19	32	11
Data General	829	124	74	198	23	24
DEC	4,272	646	407	1,053	29	25
Honeywell	1,666	220	240	460	2	28
IBM	40,200	(4,200A) (2,633B)	(3,100A) (1,944B)	(7,300A) (4,577B)	14A 16B	18A 11B
NAS	325	50	24	74	21	23
Sperry	2,799	446	374	820	3	29

(A) Estimated total service revenues, including maintenance revenues from rentals.  
(B) Separately billed charges for maintenance.

- Greater installed base.
- Increase in service prices.
- Exhibit VI-2 shows the breakdown and range of expenses for large-system service vendors. These expenses include:
  - Labor ranges from 24% of total revenues to 59% and includes FEs, service management, support personnel, and benefits. The average large-system expenditure for labor is 43% of total revenue--the single largest service expense.
  - Benefit expenses include medical, pension, and cars.
  - Spare use is hard to value as an expense, but is usually 3% of the total value of the installed base.
  - Depreciation of parts is usually over the useful life of the class of part in question. Because of product/model obsolescence, parts may become obsolete overnight and are immediately written off. Depreciation is usually 2-3% of expense.
  - Overhead includes logistics support and corporate allocations.
  - Travel usually averages 7-8% of total revenue (Note: remote support has made, and will continue to make, a significant impact on travel expenses.)
- Internal transfers and exclusions also affect service profitability. These reimbursements from internal groups include:
  - Warranties.

## EXHIBIT VI-2

### CUSTOMER SERVICES ORGANIZATIONS' AVERAGE EXPENSE PROFIT PROFILE

ITEM	1983 PERCENT OF REVENUE
<ul style="list-style-type: none"> <li>● Labor</li> <li style="padding-left: 20px;">- Direct, hardware</li> <li style="padding-left: 20px;">- Direct, software</li> <li style="padding-left: 20px;">- Remote diagnostics</li> </ul>	<p style="text-align: right;">37%</p> <p style="text-align: right;">24</p> <p style="text-align: right;">10</p> <p style="text-align: right;">3</p>
● Management /Supervision	6
● Benefits	6
<ul style="list-style-type: none"> <li>● Parts</li> <li style="padding-left: 20px;">- Use</li> <li style="padding-left: 20px;">- Inventory depreciation</li> </ul>	<p style="text-align: right;">19</p> <p style="text-align: right;">16</p> <p style="text-align: right;">3</p>
● Overhead /Miscellaneous	8
● Travel and Other	7
● Net before tax profit margin	17
Total	100%

- Field change orders/engineering change orders.
  - Sales credits.
  - Internal field service.
- 
- While many service vendors feel the expense of internal transfer is not worth the time and effort, costs can be substantial, particularly for highly valued products. For example, one field change order costing \$150 on an installed base of 2,000 systems gives rise to an internal transfer of \$300,000. Considering that many service organizations routinely handle 10 or more such orders, a total cost of \$300 million per year for internal transfer is not out of the ordinary.
  - Many vendors are using incident reports to generate internal transfer requests. This appears to be the most effective method of recovering real costs.
  - Internal transfers and other revenues are included in Exhibit VI-3. The vast majority (89%) of large-system service revenues is derived from maintenance contracts. Vendors reported that "almost all" CPU service was done under contract while time and materials (T&M) revenues frequently resulted from service on terminals and other peripherals.
  - Vendors that provide third-party maintenance service typically require service contracts from the user. Several vendors, however, indicated that time and materials coverage on third-party equipment would increase substantially in the future.
  - The average profit margin for service vendors shown in this exhibit is 17%; but, for the reasons mentioned above, there were substantial variations between vendors. All vendors, however, indicated that they expected revenues and profits to increase in the future.

EXHIBIT VI-3

LARGE-SYSTEM CUSTOMER SERVICE  
EXPENSES AND REVENUES

EXPENSE	PERCENT OF TOTAL REVENUE
Direct Labor	30%
Support Personnel	7
Administration /Management	6
Benefits	6
Parts	19
Travel	7
Overhead	3
Miscellaneous	5
<b>Total</b>	<b>83%</b>
REVENUE	PERCENT OF TOTAL
Contract	89
Warranty	3
Installation/Deinstallation	5
T & M	1
Change Order	2
<b>Total</b>	<b>100%</b>
<b>PROFIT</b>	<b>17%</b>

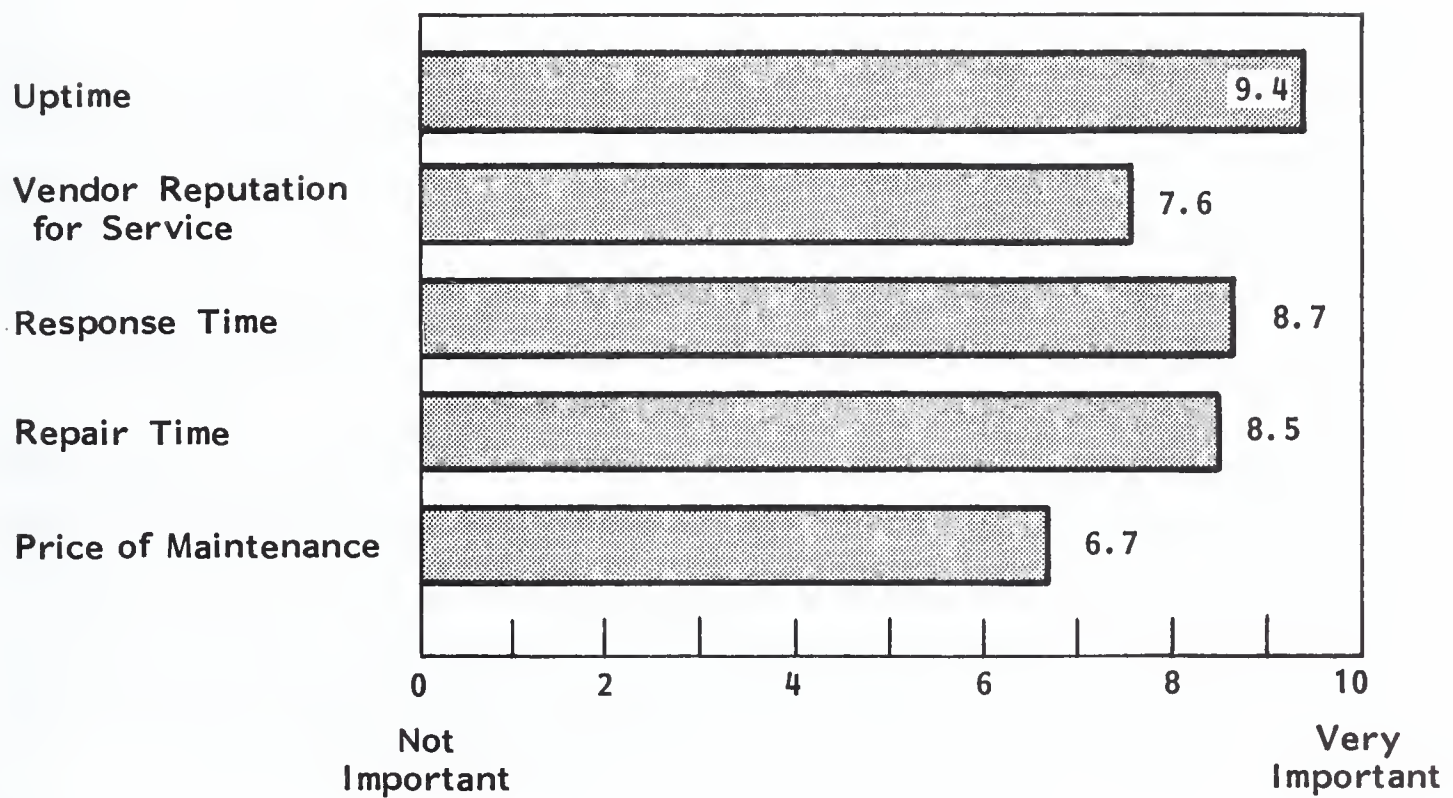


### C. STRATEGIC VALUE OF SERVICE

- Although many vendors are enjoying growth in service revenues, only a few have begun to appreciate the strategic value of service. In the early stages of commercial computers, service was included in the cost of equipment and therefore had no value apart from the hardware. The value of service became evident as it became an identifiable component of the purchase. Today, the value of service has increased to the point where it is critical to the vendor's success.
- The strategic value of service is most pronounced in three sectors of the computer industry:
  - The impact service exerts on the original purchase of equipment.
  - Revenue derived from service.
  - Service-related account/site management.
- The first, and most basic, value of service is its impact on the original hardware/software purchaser. All of the large-system vendors interviewed indicated that users are becoming much more sophisticated in analyzing the value of service as it relates to the cost of equipment. These vendors report that service is becoming a key element in the user's purchase decision. This conclusion is verified by several recent INPUT studies in which users consistently rank service features as some of the most important equipment selection criteria.
- Exhibit VI-4 demonstrates that users value service performance over price. Uptime, in this exhibit, receives a user rating of 9.4—very important—while price receives a substantially lower rating of 6.7. In fact, users will pay substantial premiums in order to receive high-quality service. Users of IBM

EXHIBIT VI-4

USER RATINGS OF MAINTENANCE IN  
COMPUTER PURCHASE DECISION MAKING

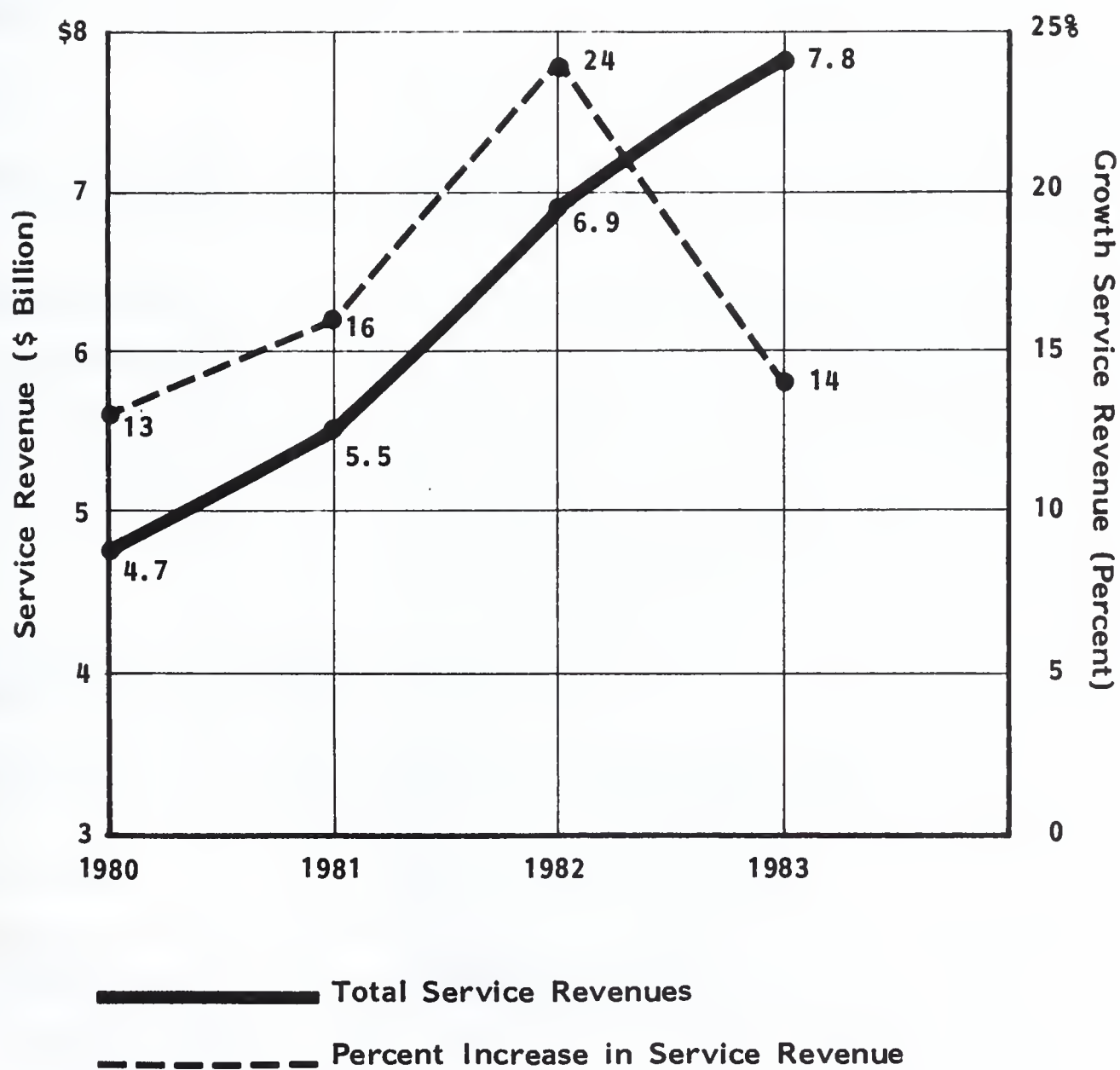


equipment, for example, stressed the value of services even more than the average user, despite the fact that IBM products can cost as much as 20% more than competitive products.

- The value that large-system users place on service has increased because users are becoming more and more dependent on their data processing equipment and because their service requirements are not currently being met. For example, almost 50% of large-systems users are dissatisfied with the service they receive in three important service areas: hardware maintenance, software maintenance, and documentation.
- The lack of service performance--particularly in such critical areas as hardware and software maintenance--is one of the major reasons that users, in making purchase decisions, have placed a high value on service. This is not, as some have suggested, simply a matter of improving the marketing of service. In order to take advantage of the customer's willingness to pay premium equipment prices, the vendor must offer substantially improved services.
- Large-system vendors with superior service organizations, such as IBM, will be able to affect equipment purchase decisions by recognizing the critical importance that users place on service. In cases where competitive equipment is essentially the same, service will be the major decision-making criterion. In addition, service has been shown to redeem vendors whose product performance characteristics are not as competitive as other vendors'.
- The second major strategic value of services relates to the overall revenue derived from service. Exhibit VI-5 demonstrates the substantial increase in service revenue, both in absolute terms and as a percentage of total growth, of the top four large-system vendors.
- Service revenue is of strategic value primarily because of its noncyclical nature. Service at companies such as DEC and Sperry has been instrumental in improving bottom-line growth, despite a relatively poor showing by sales.

# EXHIBIT VI-5

## SERVICE REVENUE GROWTH FOR THE TOP FOUR LARGE-SCALE COMPUTER VENDORS



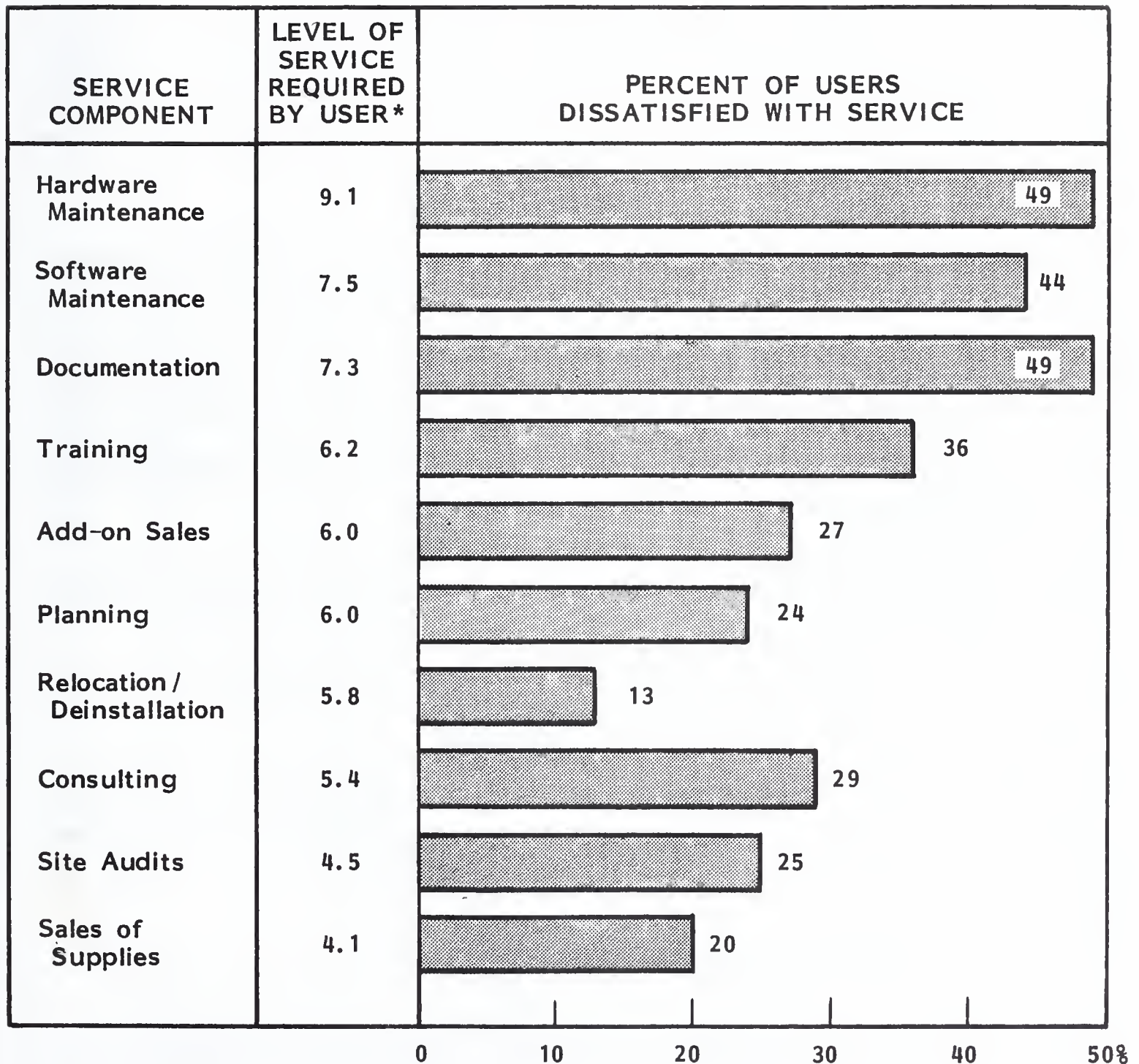


The steady growth of service revenue and its impact on total company revenue is fully demonstrated in the vendor profile exhibits in Chapter III.

- The third and most important strategic value of service is that it provides the vendor with the ability to influence data processing decisions at the user's site--to act as an account/site manager. An FE (or more appropriately, a customer service representative) in this position can identify and satisfy a wide variety of service-related user requirements. By offering a full range of services, the customer service representative can increase service revenue for the vendor and ultimately introduce the concept of profitability down to the site level.
- Before offering any new services, the customer service representative should be in a position to understand what users need in the way of services.
- Exhibit VI-6 lists requirements for service and the users' level of dissatisfaction with the service provided. The chart clearly shows that the greater the user's requirement, the higher the level of dissatisfaction with service provided; this is just the opposite of what is expected. Hardware maintenance, by far the most important requirement with a rating of 9.1, has the highest percentage of dissatisfied users (49%).
- The sale of supplies, on the other hand, has a relatively unimportant service rating (4.1) and yet 80% of the users are satisfied with service in this area. Users see a clear need for reevaluation of service in order to better meet important service requirements and spend less time on the relatively unimportant service features.
- Whereas users see a substantial benefit from redirecting service offerings, vendors must consider the potential revenue that is to be derived from such areas as supplies, consulting, and add-on sales. Success of new service offerings such as DECdirect have companies scrambling to find market niches of as-yet-unfulfilled service needs. Often, these new services are expanded at

# EXHIBIT VI-6

## CUSTOMER REQUIREMENTS FOR SERVICE



\* 1 = Low, 10 = High

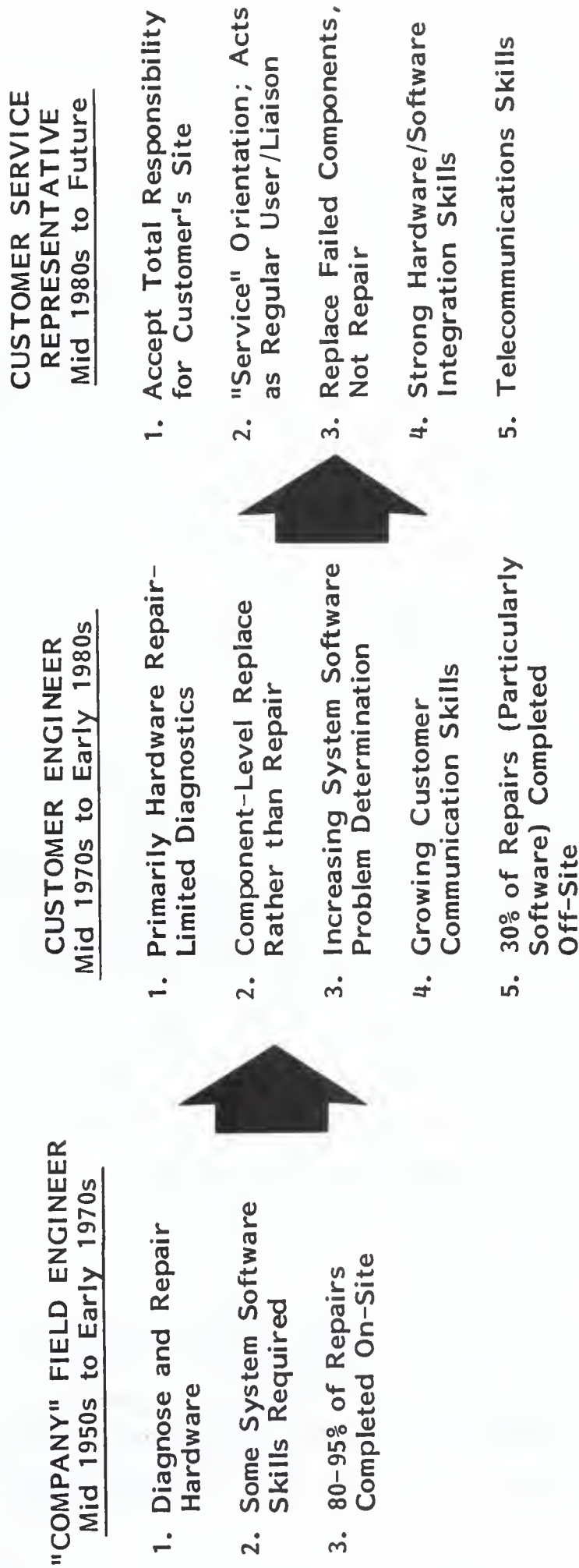


the expense of traditional service areas such as hardware or software maintenance.

- The customer service representative is in a perfect position to reconcile the needs of users and vendors. The representative will be empowered to offer a wide variety of service should it be required by the user. At the same time, the representative will be familiar with the user's situation; typically the representative will be site-dedicated. Realizing that a high level of customer satisfaction with current services must precede the sale of any new services, the representative would strive to improve user ratings in such crucial areas as hardware and software maintenance.
- It is important to point out that the customer service representative will not necessarily have field engineer or software engineer training. As Exhibit VI-7 points out, the representative's principal job will be to act as a liaison between the vendor and user. This position will become more and more necessary as the user becomes physically isolated from regular contact as a result of remote support. (Recall from Chapter IV that a major disadvantage of remote support is reduced customer contact.)
- The major skills that a customer service representative must possess include:
  - The ability to communicate with the user and to understand the user's needs.
  - Sufficient technological expertise to promote the integration of software, hardware, and telecommunication products and services at the user's site.
  - A strong service orientation.
- Initially, the benefit of having a customer service representative will be improved and expanded service for the user and increased revenue for the

EXHIBIT VI-7

CHANGING ROLE OF THE FIELD SERVICE ENGINEER



vendor. In the long term, service representatives offer a much more substantial benefit for the vendor--service profitability at the site level.

- Service profitability at the site level will result from a true understanding of the total revenues and expenses derived from each site. This understanding can come only from a customer service representative (or similar individual) who possesses an understanding of both current and future service requirements. With this knowledge, the representative can design a profitable support package that is tailored to the individual needs of the user. Various service "products," as well as the administrative costs of service, can be effectively priced to ensure both profitability and efficiency in service.

#### D. PERSONNEL TRENDS IN SERVICE

- There will be little or no growth in overall field service staffing over the next two to three years despite a continuing increase in sales of equipment. Vendors reported that although large-systems support staffing patterns will probably be the most stable, there will be significant changes in support duties and responsibilities. Large-system service personnel growth will be affected by several factors:
  - Increased use of remote support.
  - Improved service design of equipment.
  - Shift in service emphasis.
- One large-system vendor interviewed by INPUT indicated that, without labor-saving technological advances such as remote support, his company could not afford to stay in the service business. As noted above, labor is the single most expensive component of a fault call, equaling almost 50% of service

expenses. Chapter IV lists a number of factors, such as centralized dispatching, remote diagnostics, and user self-maintenance, that are designed to cut down on FE expenses.

- Several large-system vendors have publicized development efforts in the areas of fault-tolerant and redundant technology. These vendors anticipate that as these machines gain acceptance in the market (in the 1986-88 time period), on-site fault calls will be reduced dramatically. One vendor said that fault calls requiring an on-site response could fall by as much as 60% as the new technology is adapted. This vendor was quick to point out, however, that the company would always offer on-site "hand holding" when necessary.
- The third factor affecting field service personnel growth is the changing emphasis on service. As shown in Exhibit VI-7, field engineers are gravitating away from the traditional repair role and into an account representative role.
- The effect of improved technology on service personnel is already being felt. The vendors listed in Exhibit VI-8 are experiencing little or no growth in service staffs. Some vendors, such as Honeywell, have stated that they are seeking out new avenues of service (such as third-party maintenance) so they can more efficiently utilize the current staff. Other companies, such as IBM, began to plan in the early 1970s for stable service staffing levels because of the projected high cost of labor.
- Exhibit VI-9 shows both the declining growth rate in service staff and the increasing rate of staff turnover. INPUT estimates that in the large-system environment the overall growth rate will come to a standstill by 1986. Some components of service such as software and telecommunications service will continue to grow at a fast pace, but other areas (hardware diagnostics and repair) will slow considerably.
- As the staffing growth rate falls, turnover is expected to increase. Turnover will be influenced by two factors:

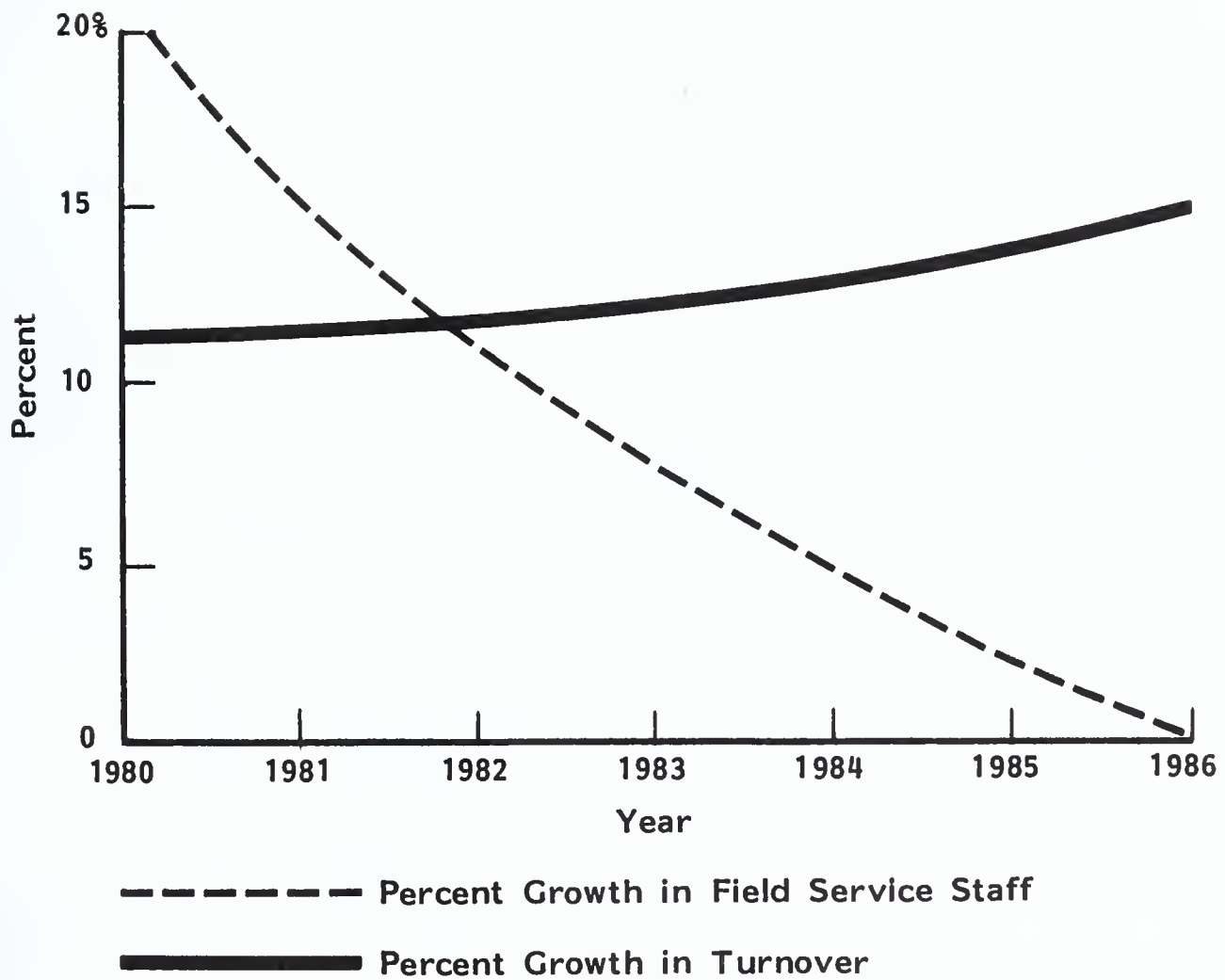
EXHIBIT VI-8

TOTAL NUMBER OF FIELD SERVICE STAFF

VENDOR	1984 NUMBER OF FIELD SERVICE STAFF	1983/1984 PERCENT GROWTH
Amdahl	1,000	0
Data General	3,500	4
DEC	17,000	3
Honeywell	4,900	0
IBM	35,000	0
NAS	600	5

EXHIBIT VI-9

GROWTH OF FIELD SERVICE STAFF AND TURNOVER





- Diminished opportunity for advancement as the result of low service staff growth.
- Increasing demand for FEs in the small-system and office product environment.
- The large-system environment has traditionally been the most stable in terms of turnover, and this will continue through the mid-1980s. Large-system service staff turnover will average just over 15% by 1986. INPUT projects a higher than average turnover (16%-17%) on the West Coast and an average turnover (14%-16%) in the Midwest and Eastern U.S.

## **APPENDIX A: QUESTIONNAIRE**



APPENDIX A  
QUESTIONNAIRE

1. Many of the large system service vendors are increasing the number of services offered to customers as a way to increase revenues and to improve user satisfaction. What type of post-sales support services does your department now offer or plan to offer in the next 3 years?

	<u>Current</u>	<u>1987</u>	<u>Please Describe</u>
- Planning	_____	_____	_____
- Consulting	_____	_____	_____
- Documentation	_____	_____	_____
- Training	_____	_____	_____
- Site Audits	_____	_____	_____
- Software Support	_____	_____	_____
System	_____	_____	_____
Application	_____	_____	_____
- Remote Diagnostics	_____	_____	_____

2. a. Dispatching technology has advanced very rapidly in the last few years. Do you see these changes in dispatching helping your field services group?

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- b. Do you offer or plan to offer centralized dispatching?

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**2. (Cont.)**

- c. Does your company have local, regional or national dispatching?

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- d. Please rate your dispatching performance. \_\_\_\_\_

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- e. Has new technology increased performance? \_\_\_\_\_

---

- f. Describe the organization structure of your dispatching unit \_\_\_\_\_

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---

- g. Is parts tracking a function of dispatching? \_\_\_\_\_

---

3. a. Spare parts inventory is usually the second largest budget item for customer service organizations (coming right after personnel expenditures). Controlling these parts inventories is a major goal of most service vendors. Is your capital investment in spares growing?

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- b. What factors influence your parts investment? \_\_\_\_\_

---

- c. Do you have parts depots on a national or regional basis? \_\_\_\_\_

---

## 3. (Cont.)

d. How many parts depots does your company have? \_\_\_\_\_

\_\_\_\_\_

e. Are parts depots at repair depots? \_\_\_\_\_

\_\_\_\_\_

f. What impact have parts depots had on productivity improvements in your company?

\_\_\_\_\_

\_\_\_\_\_

4. a. Please describe the remote support services that your company offers:

\_\_\_\_\_

\_\_\_\_\_

b. Does the customer receive a discount or a premium for using remote support?

\_\_\_\_\_

\_\_\_\_\_

c. What systems or products are covered by RSS? \_\_\_\_\_

\_\_\_\_\_

d. What was the impact of remote support services on customer support?

\_\_\_\_\_

\_\_\_\_\_

e. What trend do you see in remote support? \_\_\_\_\_

\_\_\_\_\_



5. a. We have noticed that in the last 2 or 3 years many of the major service vendors have been building up their depot service networks. Do you think that depot service will significantly impact on-site service?

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- b. Do you offer T/M or contract rates at depots? \_\_\_\_\_

---

- c. What products are covered by depot service? \_\_\_\_\_

---

- d. What channel of distribution do you use? \_\_\_\_\_

---

- e. How do you market depot service? \_\_\_\_\_

---

- f. How do you price depot service? \_\_\_\_\_

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6. a. Users have indicated to us that the number of call-backs has been growing, particularly as the number of experienced FE's has decreased. Is your customer services group tracking the problem of call-backs and, if so, how do you plan to reduce call-backs?

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- b. What percent of completed fault calls are completed in the first call?

---

## 6. (Cont.)

c. What percent of call-backs have you experienced? \_\_\_\_\_

\_\_\_\_\_

d. Are you achieving goals for MTTRepair? (Y/N) \_\_\_\_\_

MTTResponse \_\_\_\_\_

MTBF \_\_\_\_\_

System \_\_\_\_\_

Availability \_\_\_\_\_

7. a. Software support, in the minds of many users, has already become as important as hardware support. How do you see this trend toward increasing software support requirements affecting your customer services department and what is your department doing to meet these requirements?

\_\_\_\_\_

\_\_\_\_\_

b. Does your company offer:

	<u>YES/NO</u>	<u>DESCRIBE</u>
- System Software Support	_____	_____
- Application Software Support	_____	_____
- Training on Software	_____	_____
- Support Centers	_____	_____
Regional	_____	_____
National	_____	_____
- Hotlines	_____	_____
- On-Site Support	_____	_____
- User Involvement	_____	_____
- Software Consulting	_____	_____

8. a. Single source maintenance and third-party maintenance is becoming increasingly popular among the large service vendors. Honeywell, DEC, and NAS all have just recently announced major expansions in this area. How do you see this effecting your field service options?

\_\_\_\_\_  
\_\_\_\_\_

- b. Will you offer these services? \_\_\_\_\_ Describe: \_\_\_\_\_

\_\_\_\_\_

- c. On what products? \_\_\_\_\_

- d. Please describe TPM or Single Source as it relates to:

- Parts \_\_\_\_\_
- Pricing \_\_\_\_\_
- Training \_\_\_\_\_
- Documentation \_\_\_\_\_
- Software Support \_\_\_\_\_

9. a. Customer service is becoming more and more competitive with the growth of TPM, single source vendors, and new service vendors such as AT&T. How is this going to effect your pricing policies for field service?

\_\_\_\_\_  
\_\_\_\_\_

- b. When and why do you change service prices? \_\_\_\_\_

\_\_\_\_\_

## 9. (Cont.)

c. Do you offer discounts for any of these features?

	<u>Yes/No</u>	<u>PLEASE DESCRIBE</u>
- User involvement in Maintenance	_____	_____
- User delivery of Plug-in Modules	_____	_____
- Relaxed Requirements on Response Time	_____	_____
- Remote Diagnostics	_____	_____
- Volume Discounts	_____	_____
- User purchase of Parts Kits	_____	_____
- Invoice Prepayment	_____	_____

10. Where do you see field service prices going in the next 2-3 years?

\_\_\_\_\_

11. Service guarantees such as guaranteed availability and guaranteed response time are an attractive option to many users. Where do you see guarantees fitting into the future role of your field service group?

\_\_\_\_\_

\_\_\_\_\_

12. a. Personnel costs are the most significant portion of field service expenditures. Improving staff productivity is one method vendors are using to improve their competitive position in service. How do you measure the field engineer's productivity and do you foresee any major changes in overall service staff productivity?

\_\_\_\_\_

\_\_\_\_\_

12. (Cont.)

b. Are FE's becoming more productive? \_\_\_\_\_  
\_\_\_\_\_

c. Do you measure?	<u>Yes/No</u>	<u>PLEASE DESCRIBE</u>
- Revenue per Engineer	_____	_____
- Personnel per Equipment	_____	_____
- Expense to Revenue	_____	_____
- Down Time	_____	_____
- Number Call-Backs	_____	_____

13. Please complete the following personnel matrix:

	SOURCE OF NEW EMPLOYEES	TURNOVER 1983 (Percent)	EXPECTED GROWTH	TOTAL NUMBER
Junior FE				
Senior FE				
Software Support				
Line Manager				
Staff				

14. a. Field service revenues are always a touchy subject, but would you say that FS revenue growth has matched your expectations this year?

---

---

- b. Was FS department profitable? \_\_\_\_\_ Please Describe: \_\_\_\_\_

---

- c. What level of growth? \_\_\_\_\_

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- d. What are some of the factors affecting FS growth? \_\_\_\_\_

---

- e. What were FS revenues? \_\_\_\_\_

---

- f. What were FS expenses? \_\_\_\_\_

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15. Do you think that the field engineer should be involved in any of these sales or sales-support functions:

	<u>Yes/No</u>	<u>DESCRIBE</u>
- Making Goodwill Calls	_____	_____
- Software	_____	_____
- Maintenance Contracts	_____	_____
- Attending Sales Meetings	_____	_____





**APPENDIX B: USER EXPENDITURES FOR DP  
EQUIPMENT AND SERVICE**



## **APPENDIX B:        USER EXPENDITURES FOR DP EQUIPMENT AND SERVICE**

- Since user expenditures for maintenance do not exist in a vacuum, INPUT has included Exhibit B-1, a breakdown of the average expenditures of the user's Information Services Department.
- It should be noted in Exhibit B-1 that software and hardware maintenance expenditures are among the fastest growing IS budget items at almost 12% and 9% annual growth rate, respectively.

# EXHIBIT B-1

## 1984 AVERAGE EXPENDITURES BY THE USERS' INFORMATION SERVICES DEPARTMENTS

BUDGET CATEGORY	1984 PERCENT OF I.S. BUDGET	1984-1985 EXPECTED BUDGET GROWTH
Personnel Salaries and Fringes	41.4%	7.4%
Mainframe Processors	11.3	3.4
Minicomputers	2.5	16.5
Micro Computers	1.9	18.3
Mass Storage Devices	5.5	13.0
Terminals	3.8	(2.1)
Peripherals	3.5	4.0
Total Hardware	28.5%	8.6%
Communications	9.3	9.4
External Software	4.5	8.3
Custom Programming	3.1	(12.2)
Integrated Systems	0.8	0.7
Total Software	8.4%	0
Software Maintenance	1.1	11.6
Hardware Maintenance	5.7	8.7
Total Maintenance	6.8	9.2
Outside Processing Services	1.4	6.6
Other	4.2	4.9
Total	100.0%	10.8%









